AMERICA'S LARGEST TEXTILE MONTHLY

# COTTON

Entered as second-class matter at the postoffice, Dalton, Ga., under Act of March 3, 1879.

Volume 85
Number Two
$1.00 a Year.

DECEMBER, 1920

Published monthly by
W. R. C. Smith Publishing Co.,
Dalton, and Atlanta, Ga.

Our biggest asset is your good-will and confidence, which we shall, as heretofore, always try to merit.

The advantage of confining dealings to concerns of proven responsibility has been demonstrated the last six months. We will in the future, as in the past, fulfill our contracts cheerfully no matter what happens to the market.

**Valley Waste Mills**
**LaGrange, Ga.**

Table of Contents, page 61. Advertisers' Index, page 296. Buyers' Index, page 284.

PORCELAIN GUIDES
for
Textile Machinery
Mitchell-Bissell Co.
251-255 Fourth Avenue, New York
Send for
New Catalogue

# NORTHROP

TRADE-MARK REG. U. S. PAT. OFF.

# LOOM REPAIRS

Our loom repairs are made from the same patterns as the parts that they replace on the Northrop looms; they are machined with the same tools, jigs and fixtures; they are made from the same high grade materials

Repairs made under our conditions are better than those made in job foundries and shops and without our interest in the working of the Northrop loom

Draper Corporation service goes with our goods

Our prices for loom and other repairs are low

We carry several hundred tons of Finished Loom Repairs in stock for the convenience of our customers

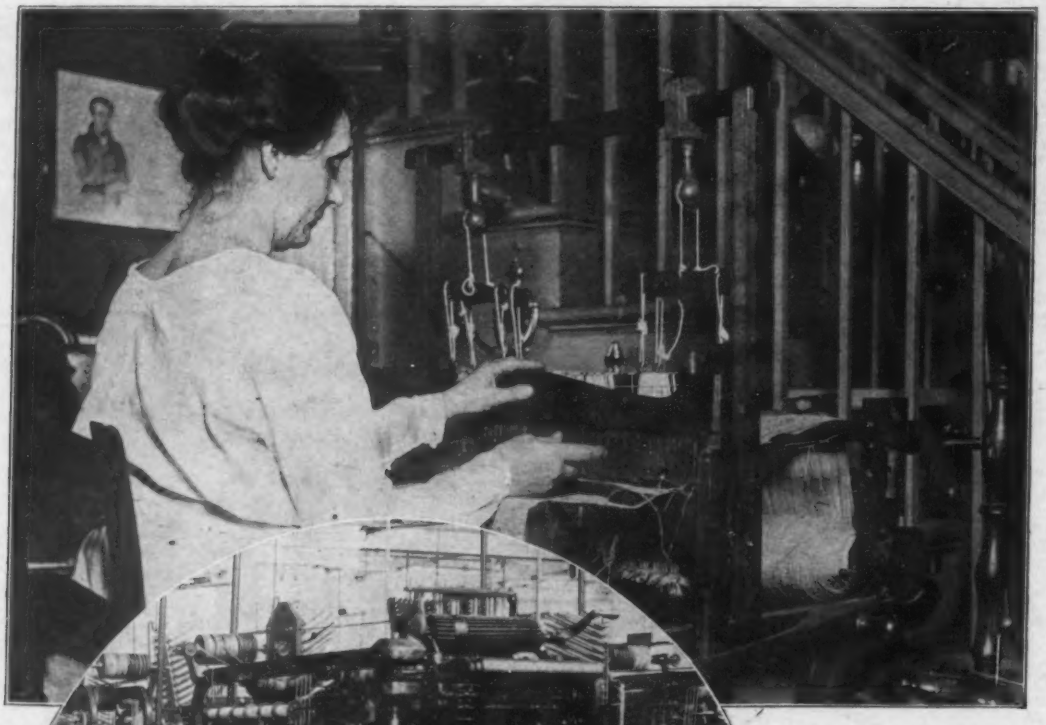
## DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

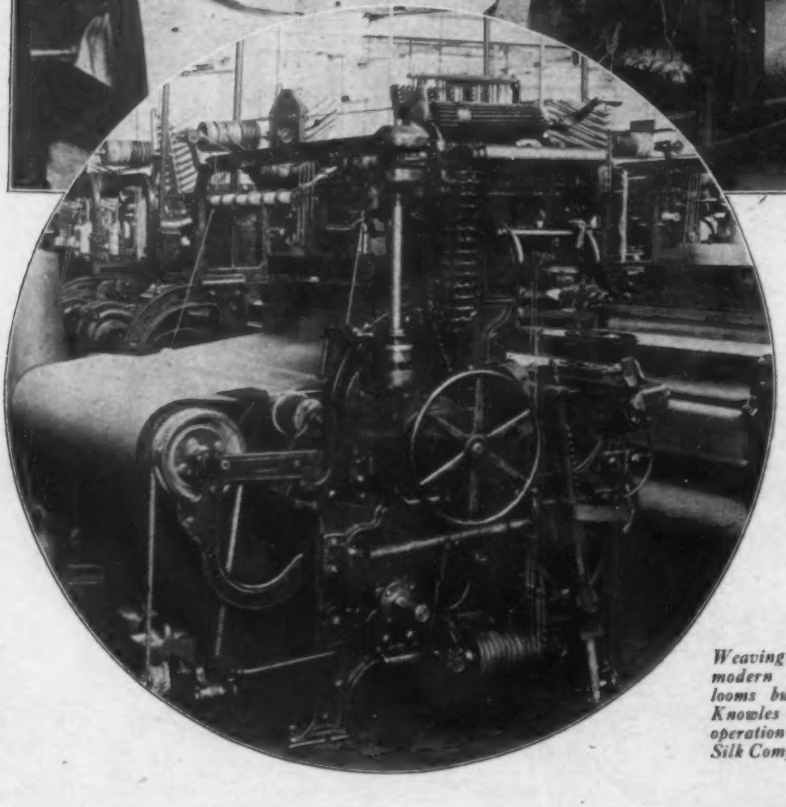
Southern Office
188 South Forsyth Street Atlanta Georgia

Copyright 1917 by Draper Corporation

# From Yards Per Week



*Weaving yards per week on an old fashioned hand loom.*



*Weaving yards per hour on modern Hyatt equipped looms built by Crompton & Knowles Loom Works—in operation at the Stewart Silk Company, Easton, Pa.*

# HYATT BEARINGS FOR

# To Yards Per Hour

When carding, spinning and weaving were home industries quantity production was unimportant and crude textile machinery sufficed.

Textile production on a commercial scale, which brought all textiles within the price range of the average man, required greater production per unit of labor and machinery and thus led to a series of important improvements in textile machinery design.

The industry took a great step forward and upward when hand looms were superseded by power looms. **You** can take just as progressive a step today by discarding your old plain bearing looms and installing modern Hyatt Roller Bearing equipped looms.

Improved looms, with cut gears, Hyatt Roller Bearings and other refinements will:

1. ***Increase your production*** because they can be operated at higher speeds without excessive vibration.

2. ***Save power*** because these easy running bearings reduce friction at least 50%.

3. ***Decrease maintenance costs*** —the rugged Hyatt Bearings protect themselves and surrounding parts of the loom from shock loads incident to banging off, etc.

4. ***Decrease lubrication costs***—looms equipped with Hyatt Bearings require lubrication only 3 or 4 times a year.

These improved looms have been effecting these economies for over five years for some manufacturers. Specify that your looms be Hyatt equipped and put your equipment on a modern basis.

1976

MOTOR BEARINGS DIVISION
DETROIT, MICHIGAN

**HYATT ROLLER BEARING COMPANY**
**INDUSTRIAL BEARINGS DIVISION**
**NEW YORK, N. Y.**

TRACTOR BEARINGS DIVISION
CHICAGO, ILLINOIS

***Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.***

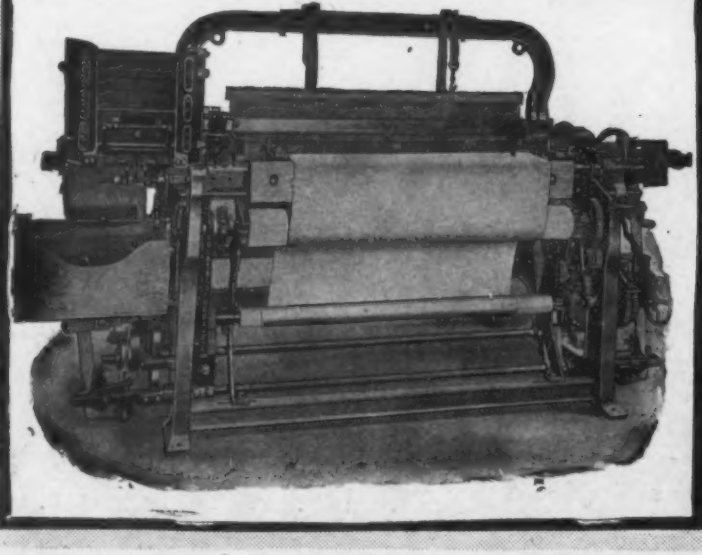
# TEXTILE MACHINERY

# Dependable Looms

STAFFORD DUCK LOOM

The Stafford Company has for a great many years concentrated on the production of a strictly practical loom. Convincing proof of the soundness of this idea is found in the large list of repeat orders for Stafford looms from a steadily growing list of progressive mills both in this country and Canada.

## THE STAFFORD COMPANY



Readville
Mass.

Southern Agent
J. H. MAYES
Charlotte
N.C.

# *Immediate Delivery!*

# Greist

## Loom Drop Wires

*(Formerly Woodbury Drop Wires)*

Can be obtained by mill superintendents immediately and in any quantity, because of the large (manufacturing) facilities of the Greist Manufacturing Company. In addition to our standard designs, we are prepared to make drop wires from your own specifications.

The Greist Loom Drop Wires are made of a special heddle wire. They are uniformly finished, accurate in design, free from burrs. The dependable resources of the Greist Manufacturing Company are all at your disposal in producing these Loom Drop Wires. A comparative test will convince you of the superior quality obtained in the Greist Loom Drop Wires.

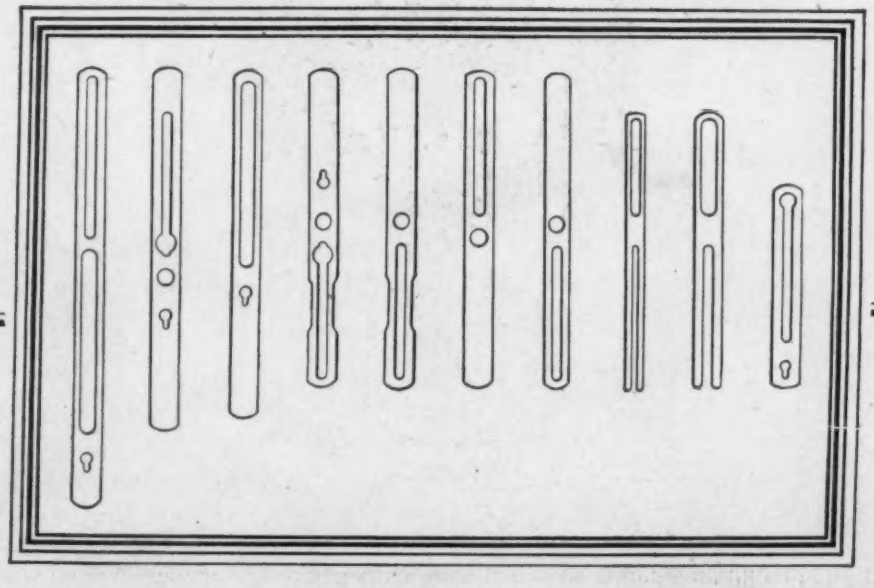
**THE GREIST MANUFACTURING COMPANY**

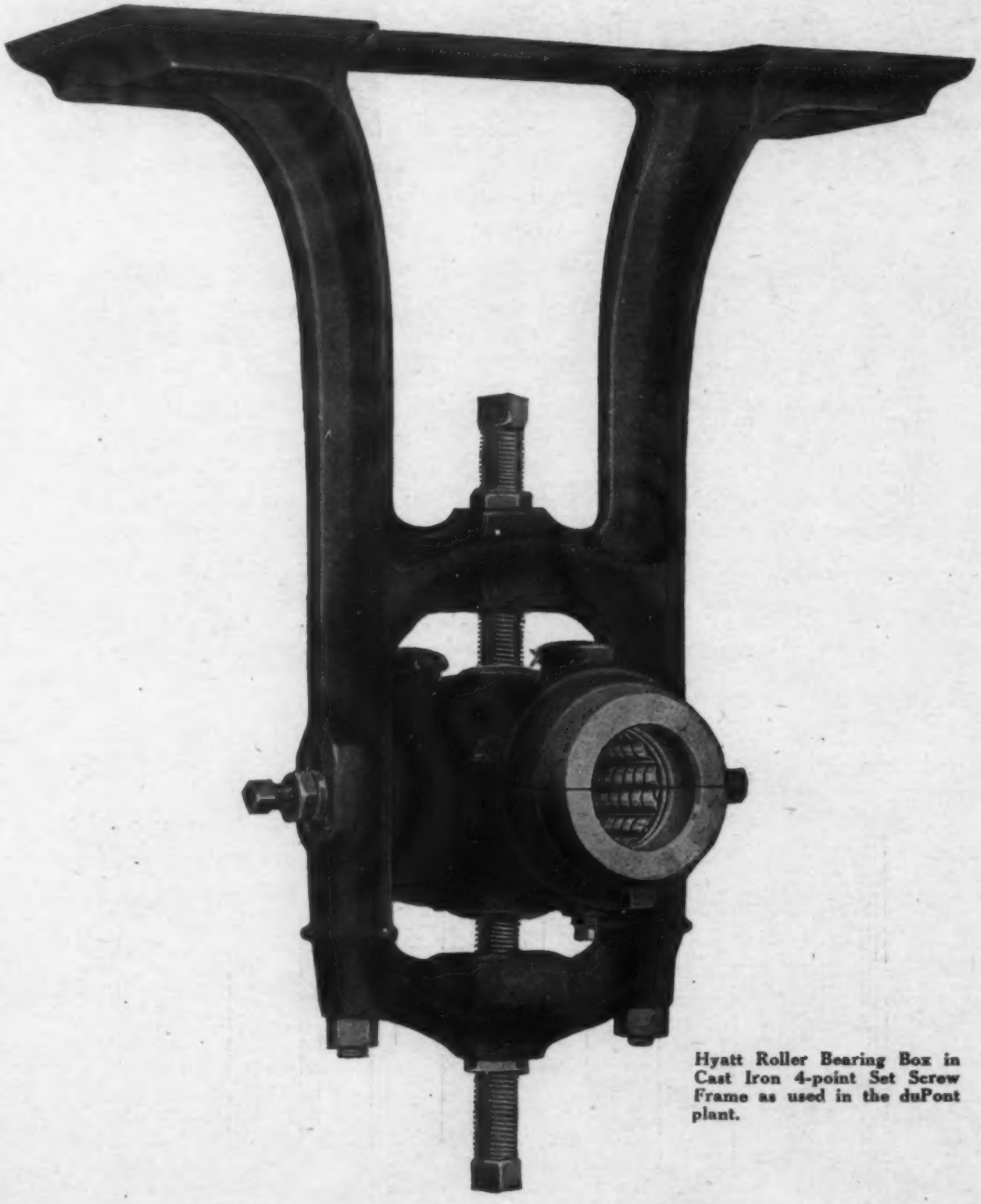
**Dept. C.**

**New Haven, Connecticut**

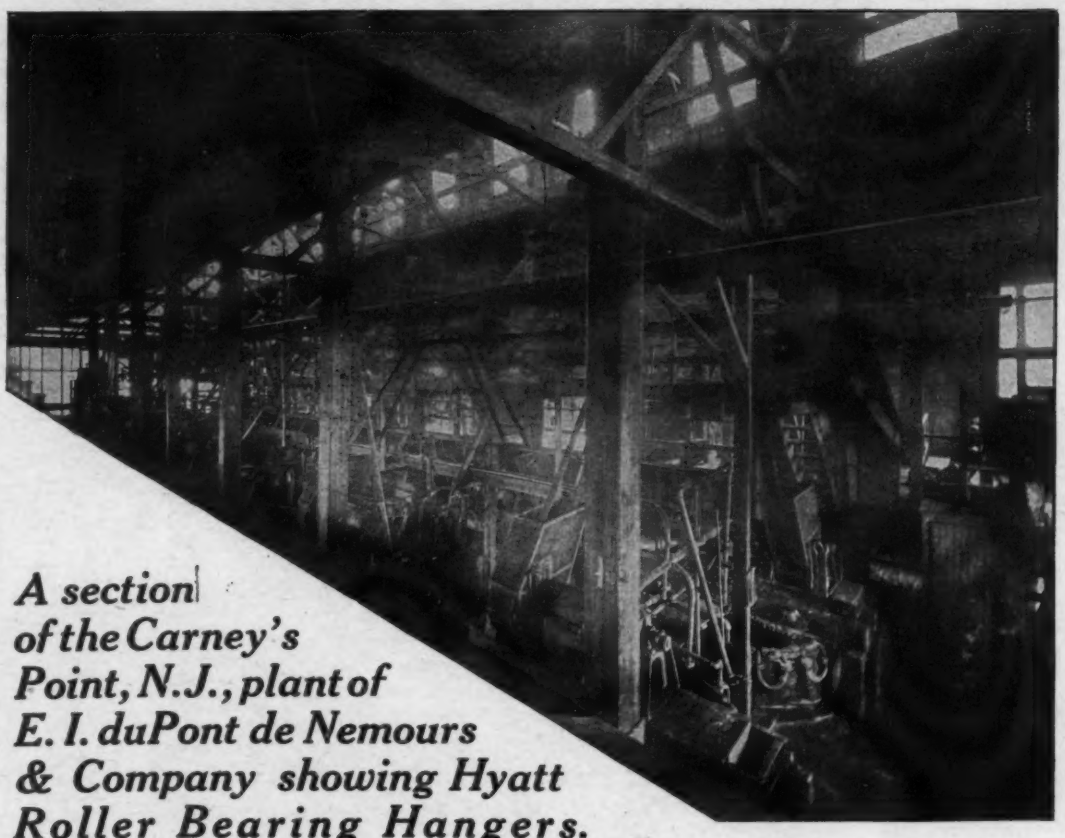
**New England Representative**
**F. W. Boyd,**
**339 Butler Exchange, Providence, R. I.**

**Southern Representative**
**G. G. Slaughter Mchry. Co.**
**Greenville S. C.**





**Hyatt Roller Bearing Box in Cast Iron 4-point Set Screw Frame as used in the duPont plant.**



*A section of the Carney's Point, N.J., plant of E. I. duPont de Nemours & Company showing Hyatt Roller Bearing Hangers.*

**$386.70 / $222.27 = 174% Annual Dividend**

**WHAT:** Twenty-eight Hyatt Roller Bearing Hangers are earning an annual dividend of 174%.

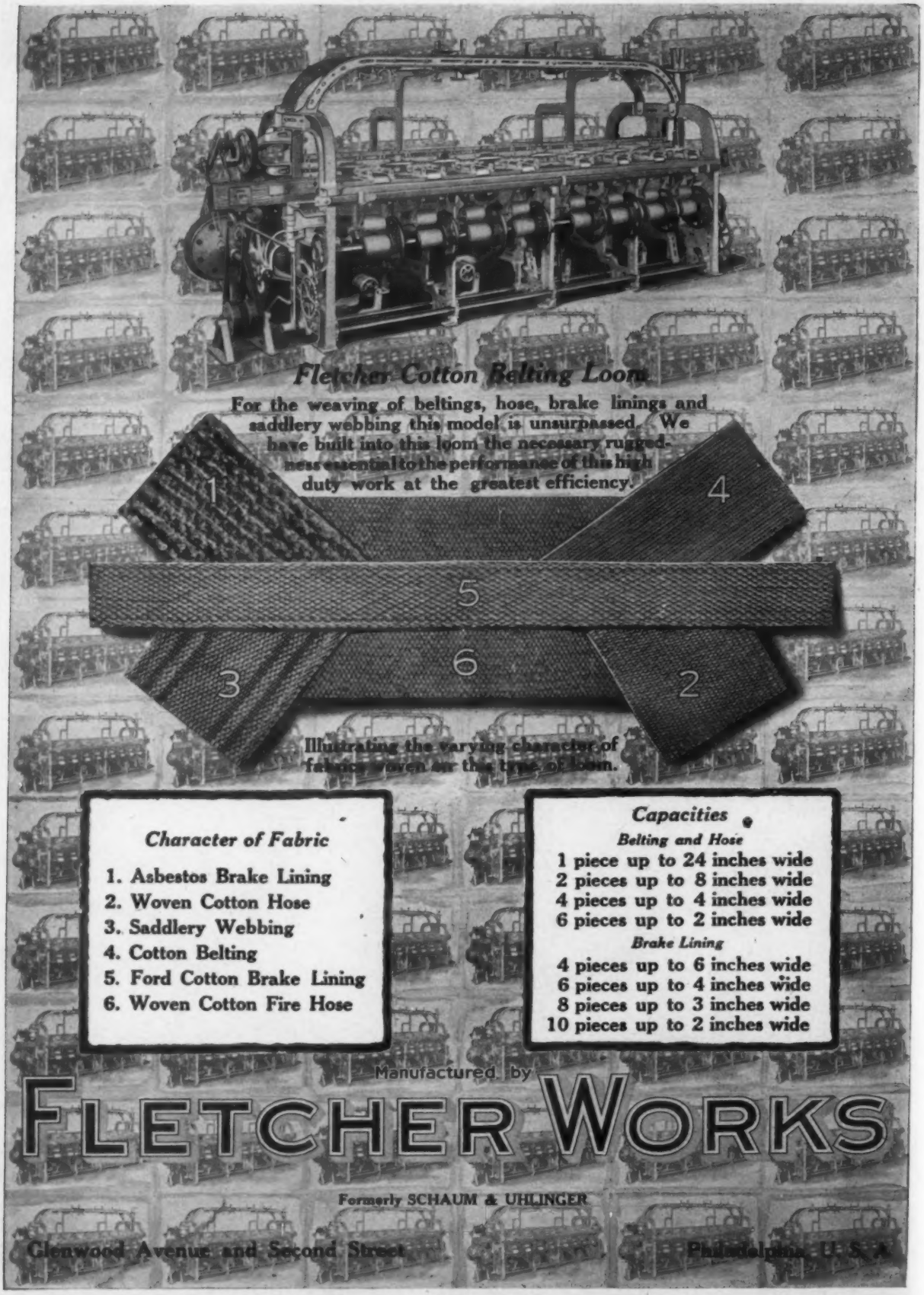
**WHY:** They cost $222.27 more than twenty-eight ordinary ring oiling bearings.
But they save $386.70 per year in power, oil and oiling labor.

**WHERE:** The Carney's Point, N. J., plant of E. I. duPont deNemours & Company.

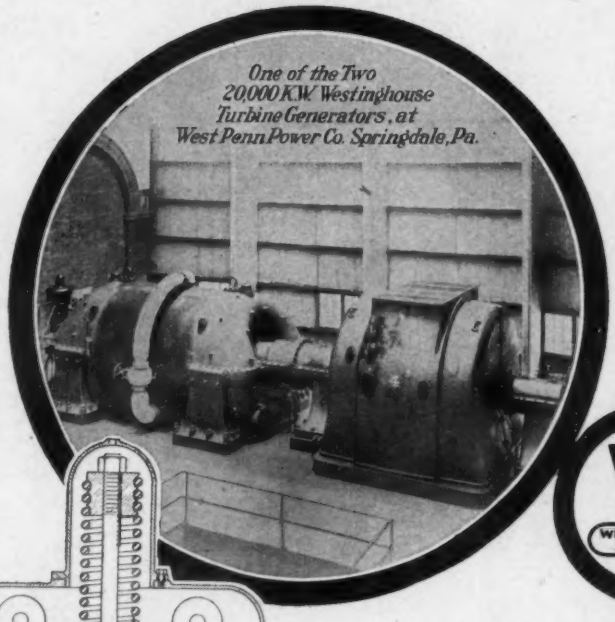
**WHEN:** They're saving this money now and will continue to do so for years to come.

Complete data on the test that produced these figures will be sent on request. Write to the Hyatt Roller Bearing Company, New York, N. Y., for your copy.

E-143

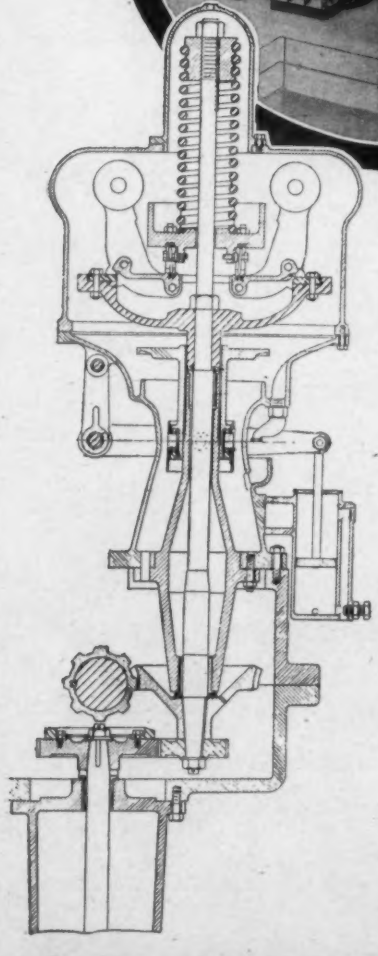

Fletcher Cotton Belting Loom
For the weaving of beltings, hose, brake linings and saddlery webbing this model is unsurpassed. We have built into this loom the necessary ruggedness essential to the performance of this high duty work at the greatest efficiency.
1
4
5
6
3
2
Illustrating the varying character of fabrics woven on this type of loom.
Character of Fabric
1. Asbestos Brake Lining
2. Woven Cotton Hose
3. Saddlery Webbing
4. Cotton Belting
5. Ford Cotton Brake Lining
6. Woven Cotton Fire Hose
Capacities
Belting and Hose
1 piece up to 24 inches wide
2 pieces up to 8 inches wide
4 pieces up to 4 inches wide
6 pieces up to 2 inches wide
Brake Lining
4 pieces up to 6 inches wide
6 pieces up to 4 inches wide
8 pieces up to 3 inches wide
10 pieces up to 2 inches wide
Manufactured by
FLETCHER WORKS
Formerly SCHAUM & UHLINGER
Glenwood Avenue and Second Street
Philadelphia, U. S. A.

# Westinghouse Large Turbines




*Reliable and Why—*

W
WESTINGHOUSE ELECTRIC



## GOVERNOR

The Westinghouse governor here illustrated is designed with massive weights to provide more than the needed power. These weights are concentrated and supported by arms of relatively no mass in order to assure constant regulating characteristics throughout the governing range.

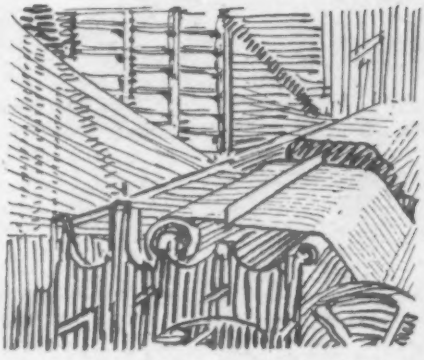
The governor parts have a maximum degree of angular motion which is imperatively essential to reliable operation.

Friction seriously interferes with the operation of any governor. Note the pains taken to prevent friction—all weights and arms are swung in knife edges.

The governor clutch, which must slide with minimum friction, is arranged to have revolving motion at right angles to its sliding stem, absolutely overcoming sliding friction.

All governor working parts are served by the oiling system of the main turbine, thus rendering the life of the governor parts indefinite.

**Westinghouse Electric & Mfg. Co.**
**East Pittsburgh, Pa.**
**Sales Offices in All Large American Cities.**



# The Place of HUMIDITY IN COTTON MANUFACTURING

## No. 6. Warping, Twisting and Spooling

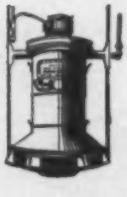
In warping, twisting and spooling the "method of attack" is changed. No longer is it the object to change pounds of cotton into yards of yarn.

Now the manufacturer tries not only to strengthen it—to lay the twist—but to get it into more economical shape for further manufacturing.

Humidity's place now is important. It demands a heavy application combined with skill and precision that the work of the operative may be aided in strengthening as much as possible. Also, to increase production and prevent breakage.

These departments may carry from 8 1-2 per cent to 9 1-2 per cent Regain to advantage;—representing relative humidities of 65 per cent to to 70 per cent.

**Profit by "High Duty Climate"**

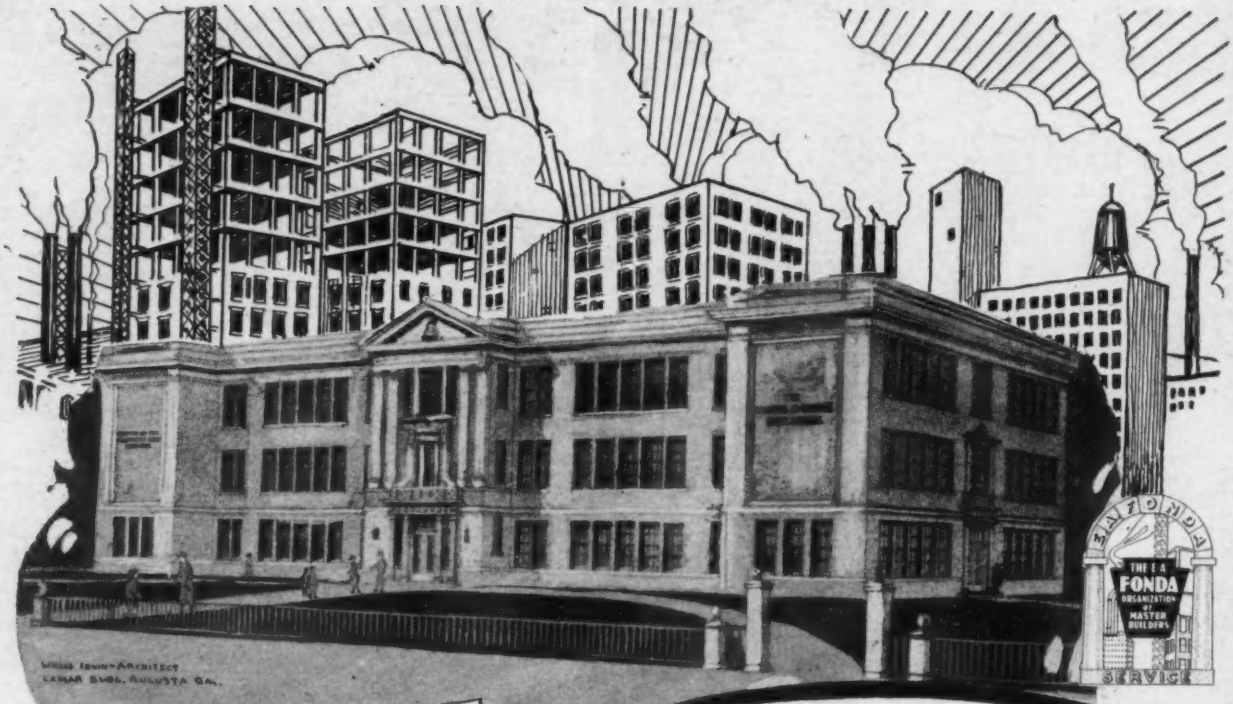


**Parks-Cramer Company**

*Engineers & Contractors*

*Industrial Piping and Air Conditioning*

**Fitchburg Boston Charlotte**




GRANITEVILLE MANUFACTURING COMPANY

MANUFACTURERS OF
SHEETING, SHIRTING AND DRILL
PLANTS: GRANITEVILLE, S. C. AND VAUCLUSE, S. C.

GRANITEVILLE, S. C.

November 20th, 1920.

Mr. E. A. Fonda,
Building Construction Service,
1304 West Washington St.,
Greenville, S. C.

Dear Mr. Fonda:—

Your letter of the 19th received, I am writing Mr. Franklin today.

It is indeed a pleasure for us to recommend you and your organization in the strongest possible terms.

Both your executive and field organizations have demonstrated to our entire satisfaction their superiority, efficiency, speed, economy and high grade workmanship in construction production.

The progress to date on our building is considerable in advance of what we had thought possible to attain.

Yours very truly,

GRANITEVILLE MANUFACTURING CO.

Vice President & Treasurer.

# Construction Efficiency and Speed that Insures Satisfaction and Economy

The satisfaction and economy that The Graniteville Mfg. Co., has experienced in the construction of their new school building is the same that is experienced by every Fonda client.

The Building Service rendered by the Fonda Organization satisfies and surprises our customers because it is a combination of modern construction, efficient and high-grade workmanship, coupled with speed and economy. Our large force of competent, capable and experienced constructors are men skilled in the erection of all types of modern buildings, and our field equipment comprises the most modern machinery known to the building trade.

When you place a building construction problem in our hands, you can have that feeling of assurance that it will be handled with a speed and economy that cannot be improved upon and that the completed building will be literally a monument to construction efficiency.

Our estimating department is always at your service and it will be a pleasure to figure your plans and submit promptly our proposal to cover the execution of your work, be it large or small.

*Write, wire or phone our nearest office today,*

# THE E.A. FONDA ORGANIZATION of MASTER BUILDERS

WEST WASHINGTON ST. GREENVILLE S.C.

THE KINNEY BUILDING, CHARLOTTE N.C.

Sturtevant
PUTS AIR TO WORK

# A Loom is as Efficient As the Air Around It

Had you ever thought of it that way?

Air that is efficient eliminates absolutely, every day in the year, static electricity—the cause of broken, twisted, and knotted threads.

It keeps the air free at all times of fly. This is better for the worker and better for the machine.

It assures strength and uniformity of the goods by providing necessary atmospheric moisture which is taken up by the fibres.

Efficient air in textile mills is air supplied by

**Sturtevant**
(REG. U. S. PAT. OFF.)

## AIR-CONDITIONING SYSTEMS

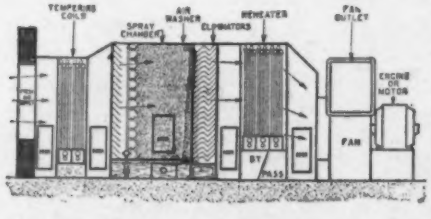
'Efficient air makes efficient looms."

A loom, although high priced, is relatively cheap in comparison to the *value* it produces. Increase this value through *more* product or *better* product and you decrease your overhead proportionately.

Sturtevant Air-Conditioning Systems stand for increased value, which they make possible through continuous production and uniform quality of product.

***May we send you the booklet, "Climate Doctors," which is full of interesting reading ?***

**Cross Section of Air-Conditioning System**




**Air is Always of Proper Temperature and Moisture**

*This sign, the symbol of the W. L. Fleisher engineering and construction organization of New York, stands for expert service in air conditioning of textile mills. This service is coupled with the quality standard of Sturtevant apparatus, and its results are guaranteed.*

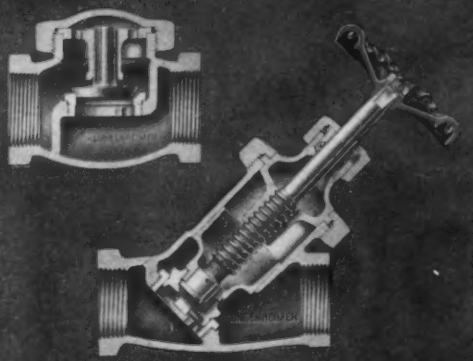
# B. F. STURTEVANT COMPANY

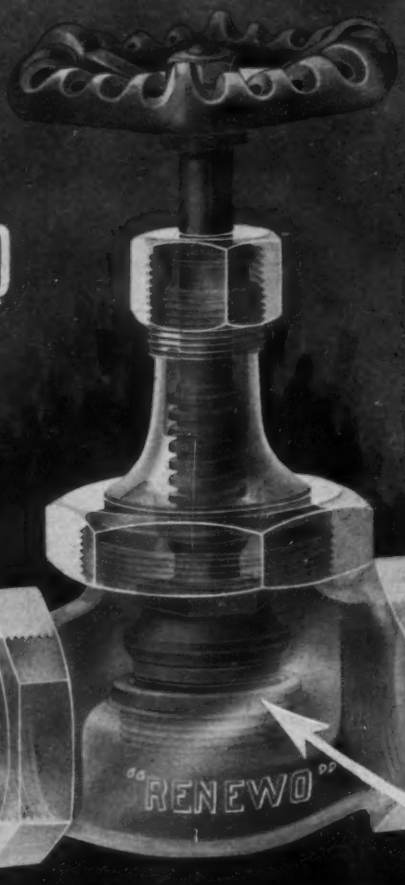
## HYDE PARK, BOSTON, MASSACHUSETTS

**AND ALL PRINCIPAL CITIES**

# —made to last a long time

# LUNKENHEIMER "RENEWO" VALVES






Have achieved an enviable record for economy in steam service. They represent the highest development in valve construction, incorporating all the good features discovered and developed in over half a century of valve manufacture.

Their installation means permanence in the line, because they are as near wear proof as can be attained, and to further enhance their durability all the parts are interchangeable and can be replaced should necessity require.

"Renewo" Valve parts are made of materials best suited to the duty the part performs.

The ***Renewable Seat*** and ***Disc*** are made of Lunkenheimer "Valve-nickel," a material having exceptional wear-resisting qualities; the Disc is provided with the celebrated Lunkenheimer "Seat-guard" which aids in preserving the seating faces and keeping them clean, and the seating surfaces are regrindable. The stem is made of a special bronze; the thread is extra long and has full contact when valve is opened or closed.

The union bonnet connection with outside protected threads; deep stuffing box with gland follower, and the self-cooling malleable iron handwheel are other points of merit.

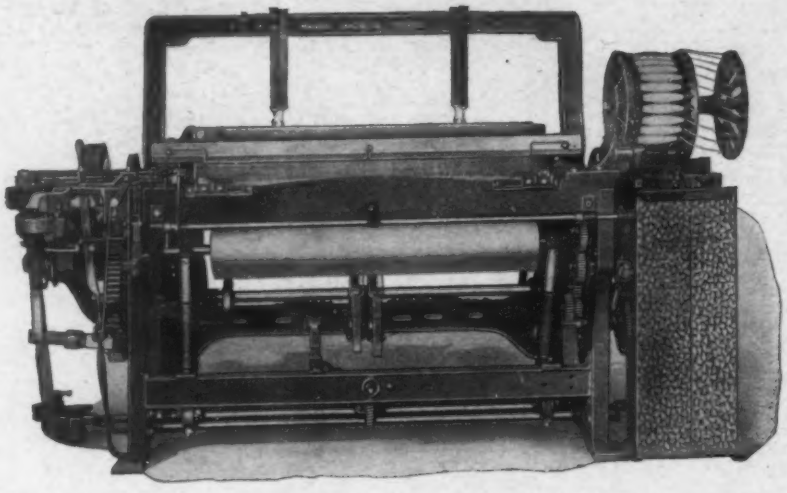
Globe, Angle, Cross, Straightway or Y and Horizontal and Angle Check Patterns for 200 and 300 pounds working steam pressures. Specify LUNKENHEIMER "RENEWO" and insist on having the genuine.

Write for descriptive booklet F535— AK

THE LUNKENHEIMER CO.
"QUALITY"
LARGEST MANUFACTURERS OF HIGH GRADE ENGINEERING SPECIALTIES IN THE WORLD
CINCINNATI
NEW YORK
CHICAGO
BOSTON
LONDON

AMERICA'S BEST
LUNKENHEIMER
"QUALITY"
SINCE 1862

# Mason Automatic Loom



With Battery, Warp Stop Motion, Feeler and Shuttle Lock

**RANDOLPH CROMPTON'S PATENTS**

Fewer Parts Standard Construction Rebounding Shuttles Overcome
Damage to Bobbins and Shuttles Prevented

We also build Revolving Flat Cards; Drawing Frames, Ring Spinning Frames; Duck Looms in various widths and weights; Silk Looms—Single Box and Two Box; Wide Sheeting Looms.

**Mason Machine Works Co., Taunton, Mass.**

E. HOWARD, Southern Agent, Greenville, S. C.

THE SIMPLEST AND THE MOST ELABORATE

*FABRICS*

Are produced on

*LOOMS*

From the

## Crompton & Knowles Loom Works

WORCESTER, MASS.

Providence, R. I. Paterson, N. J. Philadelphia, Pa.

Alexander & Garsed, Southern Representative, Charlotte, N. C.

# INVARIABLY

INDUSTRIAL PLANTS ARE ENVEIGLED INTO PURCHASING MOTION PICTURE EQUIPMENT THAT IS TOTALLY UNFIT AS WELL AS UNSAFE FOR THEIR PURPOSE.

# MOVING PICTURES

WHEN PRESENTED PROPERLY ARE OF VAST IMPORTANCE TOWARD KEEPING YOUR EMPLOYEES SATISFIED. THEY ARE ENTERTAINING AS WELL AS EDUCATIONAL.

# SIMPLEX PROJECTORS

ARE PARTICULARLY ADAPTABLE FOR COTTON MILLS ON ACCOUNT OF THEIR EXTREME **SIMPLICITY, DURABILITY** AND **SAFETY FEATURES.** BEFORE PLACING YOUR ORDER IT WILL PAY YOU TO LET US SHOW YOU THE SUPERIOR POINTS OF THE **SIMPLEX**—THE ADMITTEDLY PERFECT PROJECTOR THAT THE MAJORITY OF THE WORLD'S FINEST THEATRES, MANUFACTURING PLANTS, Y. M. C. A.'S, SCHOOLS AND CHURCHES ARE USING.

**BUT A FEW INDUSTRIAL PLANT INSTALLATIONS MADE BY US:**

Fulton Bag and Cotton Mills, Atlanta, Ga.
Interstate Cotton Mills, LaGrange, Ga.
Interstate Cotton Mills, Hogansville, Ga.
Aluminum Company of America, Maryville, Tenn.
Langdale Mills, Langdale, Ala.
Cliffside Mills, Cliffside, N. C.
Southern Textile Exposition, Greenville, S. C.
Chickasaw Shipbuilding Co., Mobile, Ala.
Bertha Mineral Co., Austin, Va.
Riverdale Cotton Mills, Riverview, Ala.
Summerville Cotton Mills, Summerville, Ga.

**——OTHER NOTABLE USERS——**

DuPont Powder Co., Hopewell, Va.
Goodrich Rubber Tire Co., Detroit, Mich.
Packard Motor Car Co., Detroit, Mich.
Elkhorn Coal Co., Wayland, Ky.
New Orleans Lt., & Ry. Co., New Orleans, La.
New River & Pocahontas Coal Co., Leyland, W. Va., and two branches.
Campbell Coal Mining Co., Eagan, Texas.
Campbell Coal Mining Co., Habersham, Tenn.
Consolidated Coal Co., McRoberts, Ky.
Consolidated Coal Co., W. Va., No. 1.
Winding Gulf Colliery Co., Winding Gulf, W. Va.
Wm. Cody Lumber Co., McNary, La.
Republic Coal Co., Republic, W. Va.
General Chemical Co., New York City.
Nichols Chemical Co., New York City.
Shell Oil Co. of Cal., Coalings, Cal.

**ALSO**

**66 Regular Army Posts, a score of Army Camps and the majority of America's Finest Theatres.**

# LUCAS THEATRE SUPPLY CO.

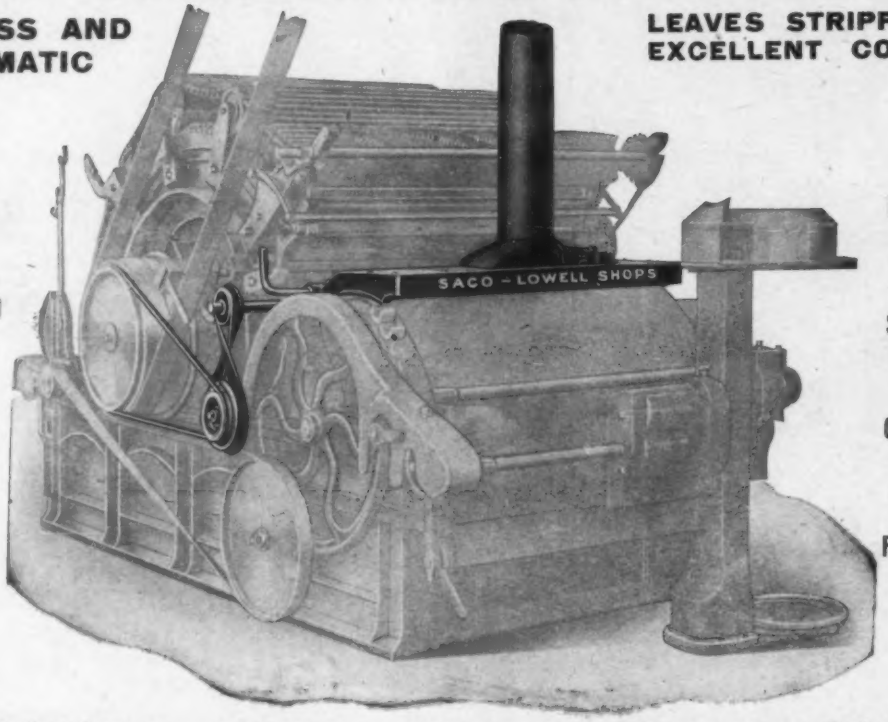
**ATLANTA 158 Marietta Street GEORGIA**

**"AMERICA'S GREATEST MOVING PICTURE EQUIPMENT HOUSE"**

# SACO-LOWELL CARD STRIPPER

**DUSTLESS AND AUTOMATIC**

**LEAVES STRIPPINGS IN EXCELLENT CONDITION**




Economical to Operate

Saves Time and Labor

Strips Card Clean

Sanitary and Efficient

Low Cost of Maintenance

Simple, Durable Practical

Control Always Absolute

Full Information Furnished

Rogers W. Davis, Southern Agent CHARLOTTE, N. C.

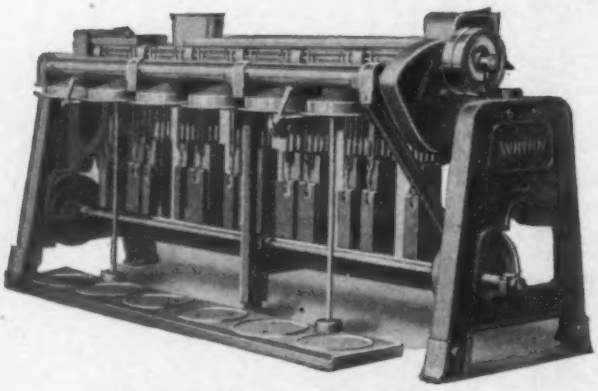
**Saco-Lowell Shops, Newton Upper Falls, Mass.**

Southern Branch Office GREENVILLE, S. C.

# WHITIN MACHINE WORKS

ESTABLISHED 1831

TEXTILE MACHINERY



*New Pattern Drawing Frame*

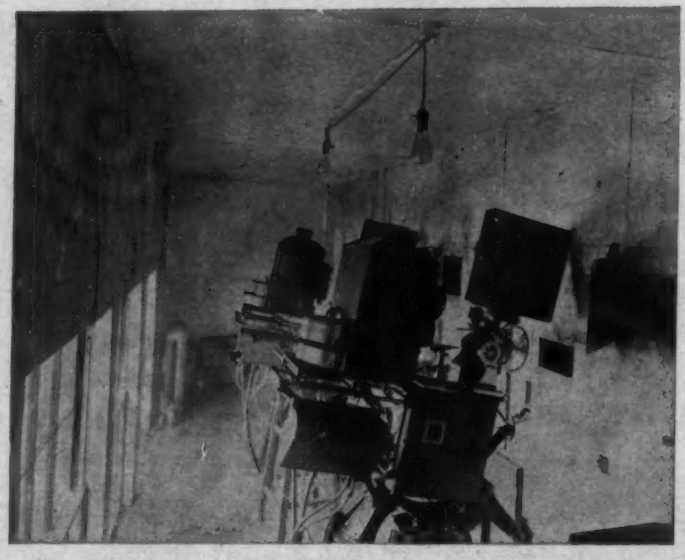
**Manufacturers of Machines for Making Yarns from Cotton, Cotton Waste, Wool, Worsted, Asbestos, etc.**

MAIN OFFICE AND WORKS

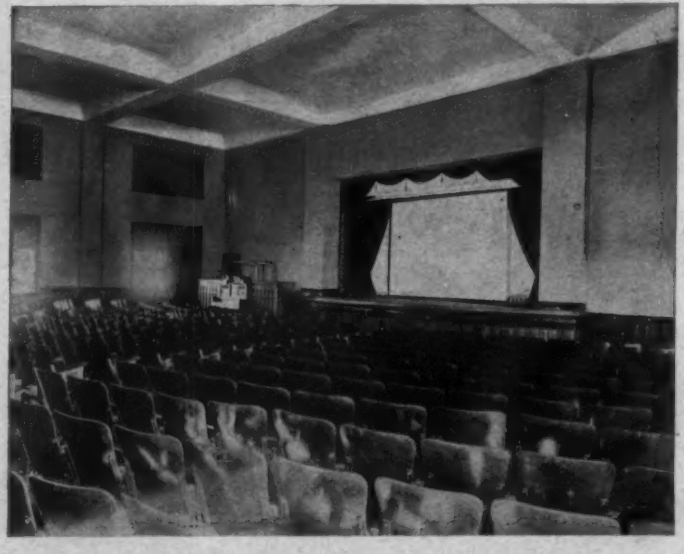
WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE N.C.

# Better Motion Pictures For Textile Mill Employees



*Showing Installation of Power's 6 B Motion Picture Machines in the Tucupau Mills Theatre.*



*Showing Interior of Tucupau Mills Theatre, Tucupau, S. C.*

THE textile industry is demanding the best moving pictures for their employees, and that is why more

## POWER'S PROJECTORS

are used by textile mills in the South than all other projectors combined.

*Here Are a Few of the Mills Using Power's*

| | |
|---|---|
| Exposition Cotton Mill | Atlanta, Ga. |
| Bibb Manufacturing Co. | Columbus, Ga. |
| Bibb Manufacturing Co. | Porterdale, Ga. |
| Gainesville Cotton Mill | Gainesville, Ga. |
| Habersham Mill | Habersham, Ga. |
| Hillside Cotton Mill | LaGrange, Ga. |
| Manchester Mill | Manchester, Ga. |
| Milstead Mill | Conyers, Ga. |
| Thomaston Cotton Mill | Thomaston, Ga. |
| Roswell Manufacturing Co. | Roswell, Ga. |
| Trion Company | Trion, Ga. |
| Rocky Mount Cotton Mill | Rocky Mount, N. C. |
| Rodman-Heath Cotton Mill | Waxhaw, N. C. |
| Pomona Mills | Greensboro, N. C. |
| Cleveland Mill & Power Co. | Lawndale, N. C. |
| Spray Cotton & Woolen Mills | Spray, N. C. |
| Isaqueena Mills | Central, S. C. |
| D. E. Converse Co. | Glenda'e, S. C. |
| Monoghan Mills | Greenville, S. C. |
| Woodside Mills | Greenville, S. C. |
| Pacolet Manufacturing Co. | Pacolet, S. C. |
| Tucupau Mills | Tucupau, S. C. |
| Victor Mills | Greer, S. C. |
| Victor-Monoghan Mills | Seneca, S. C. |
| Victor-Monoghan Mills | Walhalla, S. C. |
| Victor-Monoghan Mills | Jonesville, S. C. |
| Ware Shoals Manufacturing Co. | Ware Shoals, S. C. |
| Glenn-Lowry Manufacturing Co. | Whitmire, S. C. |
| Lanett Mills | Lanett, Ala. |
| Indian Head Mills | Cordova, Ala. |
| Selma Manufacturing Co. | Selma, Ala. |
| Central Mills | Sylacauga, Ala. |
| Tallahassee Falls Manufacturing | Tallahassee, Ala. |

*Our experience in Theatre Equipment is at your service*

"WE HAVE A SPECIAL OFFER"

## Southern Theatre Equipment Company

**No. Nine Nassau St.**
**ATLANTA, GEORGIA**

**Eighteen Fifteen Main St.**
**DALLAS, TEXAS**

FIG.20.

FIG.22.

The old year passes, bearing its burden of joys and sorrows, success and failure, shared by us all.

The perplexities and shadows, by provision of a kind Providence, are quickly forgotten, and so today we are thinking only of friendships made and old ones more deeply rooted, of the blessings that have been ours to enjoy and share and the opportunities to serve.

One of the greatest joys of our year has been the privilege of serving our many customers and friends.

In spite of manufacturing obstacles, which time and again seemed unsurmountable, we have been enabled to place in your hands our products in a total volume far in excess of any in our history.

Your loyalty, forbearance and consideration have been not only our inspiration but a major factor in our accomplishment and we take this opportunity of expressing to you our deep appreciation.

*We trust the new year may bring to you and yours unbounded happiness and prosperity.*

FIG.27

# W. T. LANE & BRO.

**Manufacturers**

**Poughkeepsie, New York**

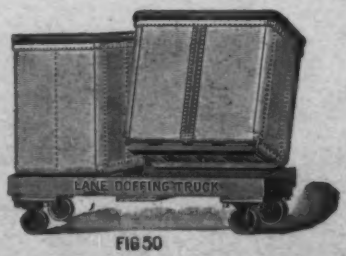


FIG 50

# *Energetic Loyalty*

The recent and present business depression in the textile industry is likened to the black cloud with a silver lining. Business experts all over the country all join in an assurance of a coming boom in 1921 that will be surprising.

Prepare for this increased demand on your production. Inoculate your employees with harmony, loyalty and desire to increase production.

The methods of the past are no longer of value—war time high wages are being cut, and welfare work has not accomplished the results looked for. There is something more needed, and that is somewhat of a psychological need—you have to get under their skin, or in other words, get into the minds of the employees and know the why and wherefore of their thoughts, desires and actions. They must be reached on a man-to-man basis, and their prejudices eliminated.

Sherman Service deals solely in viewpoints. We get at the root of every phase of discontentment and misunderstanding, study their thoughts and actions, change their viewpoints into proper channels for absolute loyalty and increased efforts.

We survey, analyze, counsel and suggest adjustments. If we find your workers' ideas wrong, and petty misunderstanding hindering his loyalty, we get him thinking right, on his toes fighting for YOU.

It is only in this way that the problem is solved, that the textile executive gets FULL value from each employee—it is human principles based on human motives that reach the solution and this followed up with human acts wins them over.

Our experience in every class of industry places us in the best position to know, and we can save you time and money with Sherman Service.

Let us tell you the whole story about Sherman Service confidentially, and without obligation. A request for information on your letterhead will have our prompt attention.

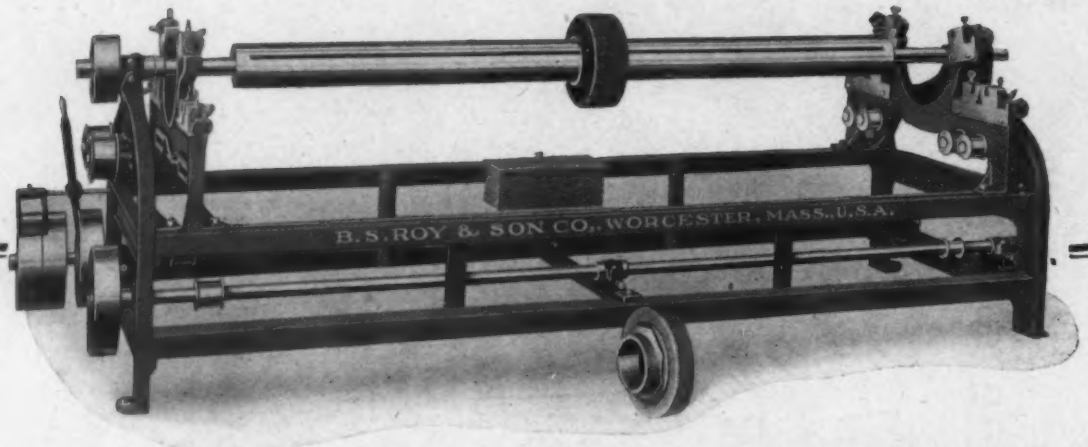
## SHERMAN SERVICE INC.

**Production Engineering**
**Industrial Co-ordination**

New York, 2 Rector St.
Cleveland, Park Building
Pittsburgh, 401 Wood St.
Chicago, 208 So. La Salle
Detroit, 73 State St.
Philadelphia, 1211 Chestnut St.
New Haven, 42 Church St.
Kansas City, Reliance Bldg.
Boston, 10 State St.
Providence, 10 Weybosset St.
St. Louis, 314 No. Broadway
Toronto, 10 Adelaide St., East
Montreal, Drummond Bldg.

Largest organization of its kind in the world.
Founded April 7, 1910.

SHERMAN SERVICE




## ROY GRINDERS HELP PRODUCTION ASSURANCE

You can only secure the greatest production from your Carding and Napping Machinery by keeping it in the best of condition. Roy Grinders are doing just this in a host of textile mills throughout the country.

The small extra investment necessary to install Roy Grinders will be returned to you many times over in the better results you will secure from your Nappers and Cards. If you haven't a Roy Grinder, we will gladly furnish detailed information, specifications and prices.

**WRITE TODAY FOR BULLETINS**

**B. S. ROY & SON CO., Worcester, Mass.**

Established 1868

**E. M. TERRYBERRY, Southern Agent,** **1126 Healy Bldg., Atlanta, Ga.**

"FUN-FUL" OCEAN WAVE. IN USE IN WASHINGTON PARK, CHICAGO. NOTE THE CAPACITY OF IT.

## BE SURE

YOUR PLAYGROUND SPECIFICATIONS INCLUDE

THE FUN-FUL LINE
PLAYGROUND EQUIPMENT

THE LAST WORD IN IMPROVED PLAYGROUND EQUIPMENT.

BUY *NOW*, and be assured of prompt delivery. Installation can be made this winter, avoiding early spring rush and attendant delays.

We have

**"Everything for the Playground"**

including

Slides, Swings, Giant Strides, Ocean Waves, Gymnasium Combinations, See-Saws, etc., etc.

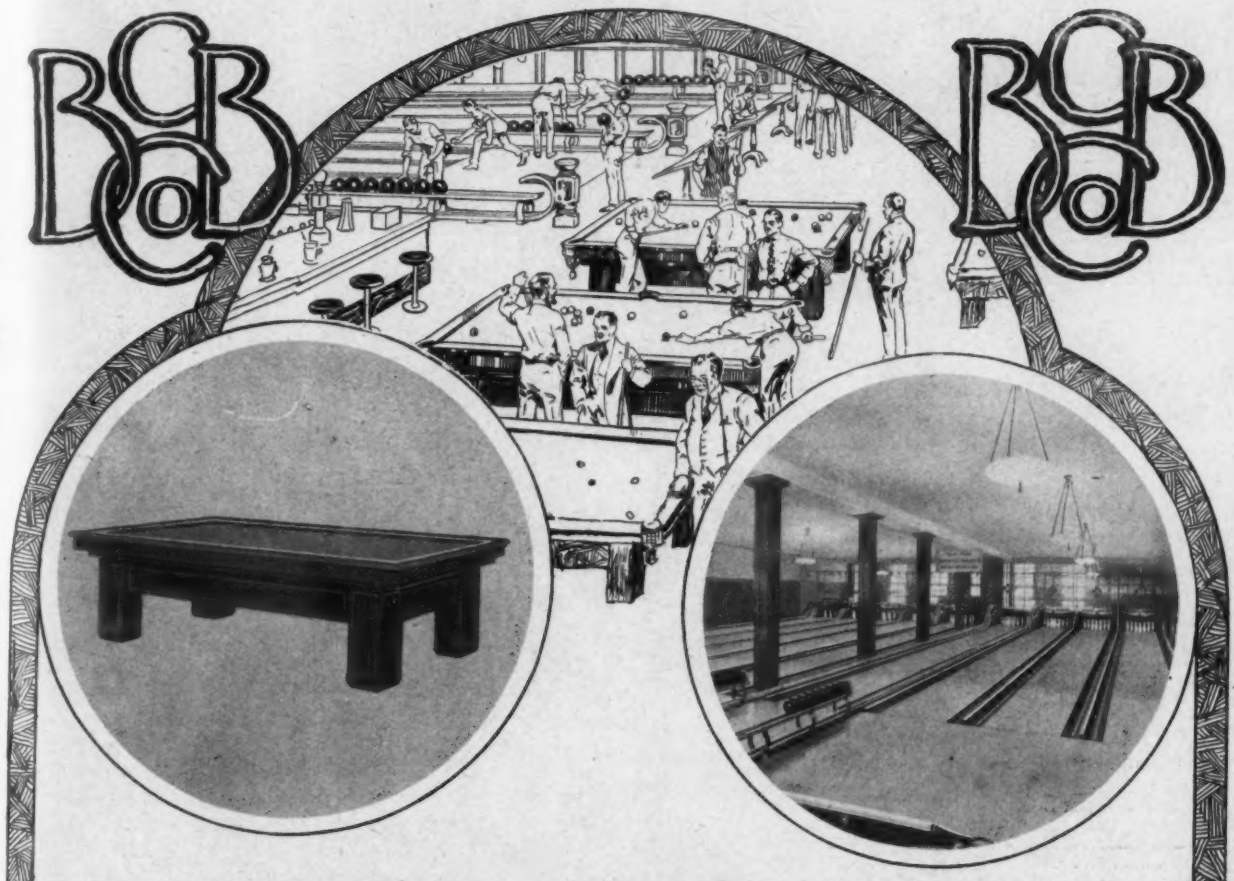
*Write for Catalog.*

**Southern Representative:**
**MR. EDW. FERGER,**
**276 Lucile Ave., Atlanta, Ga.**

**General Sales Offices ANDERSON, INDIANA.**

**HILL-STANDARD CO.**

**Factories: ANDERSON, IND. KOKOMO, IND.**



## Try Out This Plan in Your Mill, Your Men Will Be Enthusiastic.

Numerous mills who have installed billiard tables and bowling alleys have found that their men take great pride in becoming good bowling and billiard players, and have formed bowling and billiard teams that keep the men contented and eliminate their desire to seek outside amusements in doubtful places.

Try this plan in your mill and inoculate your employees with the get-together spirit. Encourage their teams and probably offer prizes and cups for championship players. Show them you are interested in their welfare, and incidentally you will be increasing their health and productiveness as both bowling and billiards contain the proper exercise so essential to good health. Bowling is one of the best cures for indigestion and constipation.

Help your help—pay them a fair price for their work, give them the kind of recreation and amusement they like, and you will have healthy contented workmen which in turn will mean higher class work and larger production.

Our plan has been found a paying investment in many mills. May we send you full information and bowling and billiard catalogs?

BRUNSWICK-BALKE-COLLENDER CO.

623-633 So. Wabash Ave., Chicago, Ill.
Branches in Principal Cities.

# Brunswick

***Billiard Tables and Bowling Alleys***

Tables for Home and Residence Use.

*Clean People Want*

# CLEAN FLOORS

*in American Business*

A few of the mills where the value of CLEAN FLOORS is recognized and the

**FINNELL SCRUBBER**

is used to maintain them:

Altavista Cotton Mills
Dan River Mills
Carolina Cotton & Woolen Mills
Erwin Cotton Mills
Whitney Manufacturing Co.
Duncan Mills
Tucapau Mills
Pacific Mills
Hamilton Carhardt Mills
Cannon Manufacturing Co.
Loray Mills
Wiscassett Knitting Mills
Union Buffalo Mills
Salisbury Cotton Mills
Appalachian Mills
Forstman & Huffmann
Crown Manufacturing Co.
American Thread Co.—5 Mills
Arlington Mills
Wood Mills
Shenandoah Mills
Viscose Manufacturing Co.
Aberfoyle Manufacturing Co.

To know that a hotel is CLEAN is to feel its respectability.

To know that a store is CLEAN is to consider it a reliable place to trade.

To know that an office building s CLEAN is to realize that its tenants are likely to be CLEAN business people.

To know that a factory is CLEAN is to be certain of a CLEAN product made by CLEAN, healthy employees.

Cleanliness is an index to character—of business as well as of person.

Unless the *floors* are CLEAN, the establishment is *not* CLEAN.

Thousands of executives, knowing that "CLEAN FLOORS reflect CLEAN business," and that ordinary hand methods are not consistently CLEAN, are using the Finnell System of Power Scrubbing with unusually gratifying success.

There's a right size outfit for scrubbing any kind of floor—any size, any place, any time, under any conditions.

Complete information gladly sent on application to our Chicago offices.

**AMERICAN SCRUBBING EQUIPMENT CO.**

***Also manufacturers of Finola Scouring Powder***

**General Offices: 188 N. Wabash Ave., Chicago  Factories: Hannibal, Mo.**

DISTRICT OFFICES

| | | | | | | |
|---|---|---|---|---|---|---|
| ATLANTA | BUFFALO | DENVER | LOS ANGELES | NEWARK | PHILADELPHIA | SALT LAKE CITY |
| BALTIMORE | CHICAGO | DETROIT | LOUISVILLE | NEW ORLEANS | PITTSBURGH | SAN FRANCISCO |
| BOSTON | CINCINNATI | INDIANAPOLIS | MILWAUKEE | NEW YORK | PROVIDENCE | SEATTLE |
| | CLEVELAND | KANSAS CITY | MINNEAPOLIS | OMAHA | ST. LOUIS | |

FINNELL SCRUBBER

*"CLEAN FLOORS Reflect Clean Business"*

*It* **SCRUBS** *Electrically!*

# FINNELL SYSTEM

**OF POWER SCRUBBING**

TUEC
STATIONARY CLEANERS
TRADE MARK AIR REGISTERED

# Better Than Fans and Blowers

*Made in 5 sizes to meet any requirement.*

IN many textile mills and factories where formerly fans and blowers were used to protect workers from flying lint, dust and dirt produced by machines

**The Tuec Suction Cleaner**

has proved far more efficient and satisfactory. Instead of scattering dust and lint the TUEC *consumes* it and deposits it directly in its tank.

If you are using a fan or blower in your mill, if your janitors are wasting hours and dollars for the want of a Suction Cleaning Plant for floor cleaning and the removal of lint and dust from machinery, it will surely pay you to investigate and learn what the Tuec is doing for others.

Tuec Stationary Suction Cleaners are used everywhere—in cotton mills, textile mills, plants for the manufacture of electrical apparatus, coal pulverizing, Portland cement and rubber goods plants, wire mills, carpet mills, cereal mills, powder mills, paper box and wood working plants, printing plants, machine shops, laboratories and scores of others.

**Our advisory service is complete and reliable. Write for catalog.**

**The United Electric Company - Canton, Ohio**

**New York Chicago Cleveland Toronto, Ont**

***It Gets the Dirt Where Dusters, Brooms and Brushes Fail.***

# *Where two hands are better than four*

Notice, too, the one man is handling two boxes. He loaded the truck himself—and he'll unload it just as easily—without strain, trouble or jar. He is working with a McKinney One-Man Truck. That steel package holder sticking up over the top box does the same work the two men are straining over. It picks up the load.

At the end of the day the man with the McKinney Truck will have done just as much work as the two men with the old fashioned truck—and probably more. His work is easy. All he has to do is to push his truck up to the load—throw the steel package holder over the box, bag or bale; pull back on the handle and the load is on its way.

Labor is too expensive to have two men doing one man's work. The need for speedy shipments is too great to waste time in the trucking department. With McKinney One-Man Trucks every man does a full day's work. Shipments move with a snap. Every man is a producer.

Here's another point to be remembered. If you use motor trucks in moving merchandise, a McKinney Truck can go right along with the shipment and enable the driver to unload the truck just as quickly as it was loaded. This means more trips in a day—a cut down on motor overhead.

McKinney One-Man Trucks are of light, rugged construction—sturdy enough to carry the heaviest box, bale or bag you handle. They are all built narrow gauge to fit narrow stacking aisles.

This truck is needed wherever merchandise is moved. With a McKinney Truck a man weighing one hundred and thirty pounds can lift and move a barrel weighing six hundred pounds—alone and without strain. Investigate this one man idea. See how it will dovetail with your trucking conditions and cut down expense for you.

*Our illustrated catalog, "The One-Man Method," will answer your particular trucking problem. Send us your name and address and we will forward you a copy of this interesting booklet.*

McKinney Manufacturing Co.
Pittsburgh

Export Representation
The Lovingood Co., Atlanta, Ga.

*Also manufacturers of McKinney Hinges and Butts, garage and farm building door-hardware and furniture hardware.*

# McKINNEY *one-man* TRUCKS

White Truck owned by The Cotton Warehouse Co., of Atlanta

# Hauls Cotton From Neighboring Towns

THE Cotton Warehouse Co., of Atlanta, finds a big advantage in maintaining independent transportation facilities for hauling from surrounding territory. Its White Trucks are sent to neighboring towns and plantations and obtain baled cotton when wanted at prevailing market price. With the trucks, the cotton can be moved and resold without delay.

This plan of transportation has eliminated the delays experienced on shipments via freight. White Trucks have proved dependable for this work. The trips frequently extend fifty miles into neighboring districts.

In the service of manufacturers, dealers and plantation owners, White Trucks have proved reliable and economical for cotton hauling. Whites everywhere are known for their high earning power, for their ability to do the most work for the least money.

THE WHITE COMPANY
CLEVELAND

# White Trucks

# "Dat sho' am a handy baby, Boss"

"Yas, suh, I don't need no nigger helping me when I use dat Handy Andy truck, cause, Boss. dat baby jus nachelly lifts dem heavy bales by itself, and it lifts 'em without gettin underneath 'em too. Why Boss, I can load fifteen hunnard pounds on dat truck without any help and do it quicker dan I usta could with dem old style trucks with two niggers helping me."

The HANDY ANDY ONE MAN TRUCKS are no experiments but are being used in some of the largest plants in this country. Their success is due to their simple strong features that can be found in no other truck. It is a one man truck and lever on wheels. It lifts the package without getting under it. It can be used in cramped places and with the boxes or packages against the walls. No helpers needed. One man and the Handy Andy handles the heaviest packages.

Let us tell you about the many features of this time and labor saving little truck, and the secrets of how it accomplishes its work so easily.

**Handy Equipment Corporation**
PEORIA, ILLINOIS.
J. KIRK ROWELL CO., Dist. Mgr.
716 Atlanta Trust Bldg., Atlanta, Ga.

HANDY ANDY
ONE MAN
TRUCK

Type B
With
Movable Axle

# GRATON & KNIGHT

## *Announces*

## *SWEEPING PRICE REDUCTIONS*

### The Result of Months of Concentrated Effort

FOR several decades the Graton & Knight Manufacturing Company has been the leader in the leather belting industry, taking the initiative in every important change. In keeping with this position, we announce a general price reduction on all grades of leather belting.

Only by taking advantage of every economy in manufacturing and marketing made possible by the tremendous volume of our business are we now able to offer to the public this substantial reduction in price and still maintain our high standard of quality.

This reduction became effective November 18, 1920.

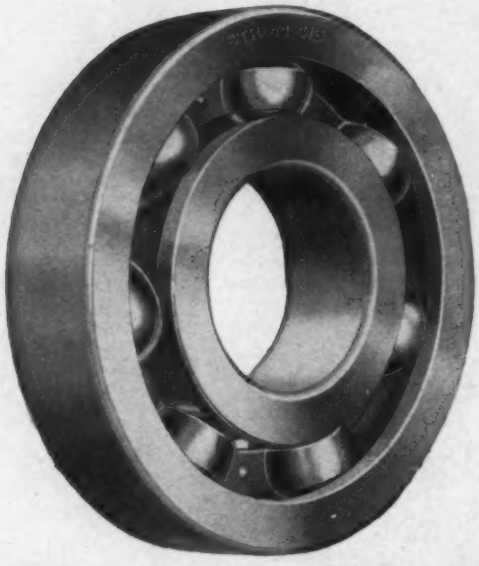
The manager of our home office, 356 Franklin St., Worcester, or any of our branches, will give particulars upon request.

W. M. SPAULDING, President.

**THE GRATON & KNIGHT MFG. CO.**
**WORCESTER, MASS.**

Oak Leather Tanners, Makers of Belts and Other Leather Products
Distributors and Branches in All Principal Cities

**Graton & Knight**
**Standardized Series**
**Leather Belting**
*Tanned by us for belting use*



# Reduce Friction Losses With Strom Bearings

The Strom Bearing is the economical bearing. The toll that friction takes up in your mill is a dead loss. Friction eats up your power and oil and wears out your shafts and bearings. With plain bearings the heavier the load the more friction and the greater the waste.

Strom ball bearings run with practically the same absence of friction at full load as at no load. They save friction waste.

Few textile bearings have more severe and destructive loads than picker beater and fan bearings. Strom equipped beaters and fans mean a saving of power and oil, freedom from shutdowns, and repairs and oil-smudged lap. The bearings pay for themselves in a short time.

Strom equipment for any make of picker, ready to apply, can be obtained from our Southern distributor, the Aldrich Machine Works, Greenwood, S. C.

*Radial Bearings made in a wide range of sizes for light, medium and heavy duty.*
*Angular contact bearings especially designed to support combinations of radial and heavy end thrust loads.*
*Thrust bearings made in all types and sizes with flat grooved races.*

**U. S. Ball Bearing Manufacturing Co.**

(Conrad Patent Licensee)

4544 Palmer St., Chicago, Ill.

88

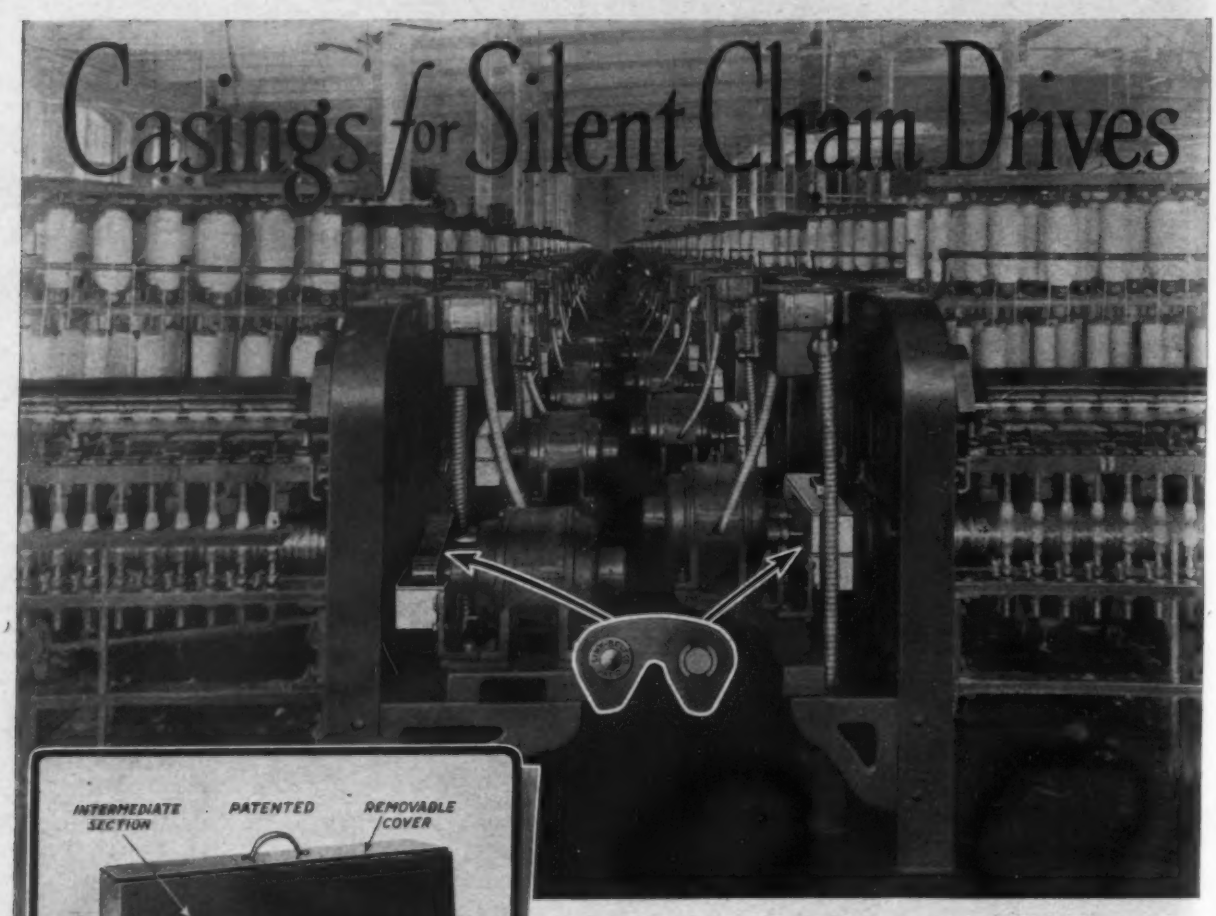
Strom BEARINGS

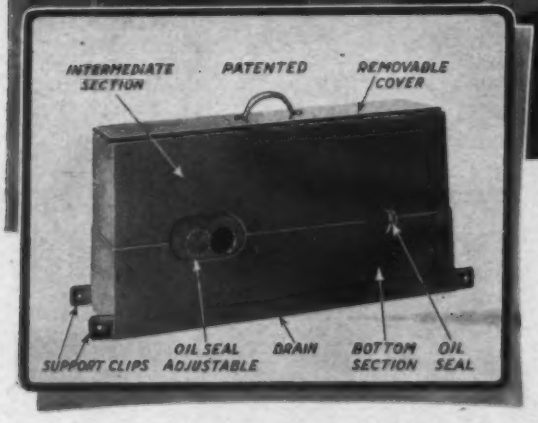
Some people are belt buyers—others simply let themselves be sold. Those in the first group are men of vision, looking beyond a quoted price to the service that price pays for. They are usually well satisfied with belt transmission—because they bought not belting merely but power transmission efficiency. In the second group are those who never look beyond price—they grasp nothing but first cost. They are usually chronically dissatisfied—habitual critics of belt transmisison. Buyers of Ladew Leather Belting know what they want, are willing to pay for it, and get what they pay for—maximum belting service.

**EDW. R. LADEW CO., INC.**
**NEW YORK, N.Y., U.S.A.**
**Since 1835**
*Branches and Distributers, with Complete Stocks, in All Principal Cities*

# Ladew

# Casings for Silent Chain Drives






HERE is the famous Link-Belt Patented Casing specially designed for small-ratio, high speed Silent Chain Drives on textile machines.

It protects the highly-efficient Silent Chain Drive from flying lint—it provides effective lubrication at a minimum expense for attendance and oil—it covers all moving parts and makes for absolute safety to employees.

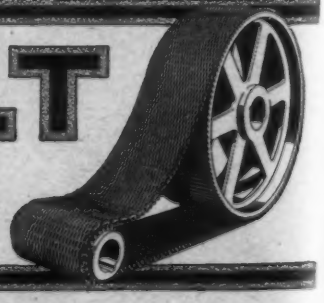
Link-Belt Silent Chain is known as the "Ideal Drive for Textile Machinery."

Let us tell you how both would fit into your mill. Catalog and further particulars on request.

575

| PHILADELPHIA | CHICAGO | LINK-BELT COMPANY | | INDIANAPOLIS | TORONTO |
|---|---|---|---|---|---|
| New York . . . . | 299 Broadway | Cleveland . . . . . | 429 Kirby Bldg. | Los Angeles . . . | 163 N. Los Angeles St. |
| Boston 9 . . . . | 49 Federal St. | Detroit . . . . . | 4210 Woodward Ave. | Toronto, Can. . . | Canadian Link-Belt Co., Ltd. |
| Pittsburgh . . . . | 1501 Park Bldg. | Minneapolis . . . . . | 418 S. Third St. | Denver . | Lindrooth, Shubart & Co., Boston Bldg. |
| St. Louis . . . . | Central Nat'l Bank Bldg. | Kansas City, Mo. . . | 306 Elmhurst Bldg. | Louisville, Ky. . | Frederick Wehle, Starks Bldg. |
| Buffalo . . . . | 547 Ellicott Square | Seattle . . . . . | 320 First Ave., S. | New Orleans . | C. O. Hinz, Hibernia Bank Bldg. |
| Wilkes-Barre . . . | 34 Nat'l Bank Bldg. | Portland, Ore. . . . | First and Stark Sts. | Birmingham, Ala. | S. L. Morrow, 720 Brown-Marx Bldg. |
| Huntington, W. Va. . | Robson-Prichard Bldg. | San Francisco . . . . | 168 Second St. | Charlotte, N. C. | J. S. Cothran, Com'l Bank Bldg. |

# LINK-BELT
## SILENT CHAIN
## FOR POWER TRANSMISSION



Do you realize the value of one minute in your shop in the days of maximum production? Do you know what you lose by holding up your production two, three, four minutes—a half hour—a half day perhaps? Then you only need know Cocheco Belting to want it.
No costly idle moments with Cocheco. No cost of repairs. Reduced labor. Increased production. The belt that is made from the most lasting leather. The belt that renders service after twenty years' usage.
You'll want Cocheco when you know it. Send for details.
I. B. WILLIAMS & SONS
Dover, N. H.
157 Summer St., Boston; 71-73 Murray St., New York; 14-16 N. Franklin St., Chicago
COCHECO

"The Steady Pull Perfects the Product"

**CLEAN · RUNS COOL · OIL BATHS NOT REQUIRED**

# MORSE SILENT CHAIN DRIVES

**Without Slip, the Time Keepers of Production Bring out the Profits that are Concealed by the Slipping Belt.**

The MORSE Rocker Joint bears the burden and patented Guide Links hold alignment. Flexible as a belt. Positive as gears. More efficient (98.6%) than either.

*Write today for Technical Textile Booklet*

**MORSE CHAIN CO.,** LARGEST MANUFACTURERS OF SILENT CHAINS IN THE WORLD **ITHACA, N. Y.**

*Engineering Service* *Assistance Without Obligation*

*Address Nearest Office*

BALTIMORE, MD.....1402 Lexington Bldg.
BOSTON, MASS.....141 Milk Street
CHICAGO, ILL.....Conts L. & T. Bldg.
CLEVELAND, OHIO.....Engineers Bldg.
DETROIT, MICH.....Penobscot Ave.
CHARLOTTE, N. C.....803 Asheboro Street
NEW YORK CITY.....50 Church St.
PITTSBURGH, PA.....Westinghouse Bldg.
PHILADELPHIA, PA.....Harrison Bldg.
SAN FRANCISCO, CALIF.....Monadnock Bldg.
ATLANTA, GA., Candler Bldg.....Scott, M. E.
CANADA.....Jones & Glasco, Reg.
MONTREAL, St. Nicholas Bldg.....Toronto Trader's Bk. Bldg.
KANSAS CITY, MO.....Fidelity Bldg.....Morse Engineering Co.
MINNEAPOLIS, MINN. 113 3rd St. S.....Strong-Scott Mfg. Co.
ST. LOUIS, MO.....Commercial Bldg.....Morse Engineering Co.

**"Morse" is the Guarantee Always Behind the Efficiency, Durability and Service**

IN the bearings sponsored by **SKF** its type of anti-friction bearings have been developed to their highest perfection. And **SKF** further provides an engineering service not only to assure to itself proper application and use of **SKF** products but to help the buyer to fully capitalize the mechanical value built into each device. This service is freely offered and is being continually broadened and advanced by laboratory research that is international in scope. You are assured a similar service behind every product bearing the mark—

# SKF

*Among the* **SKF** *products now offered are:*

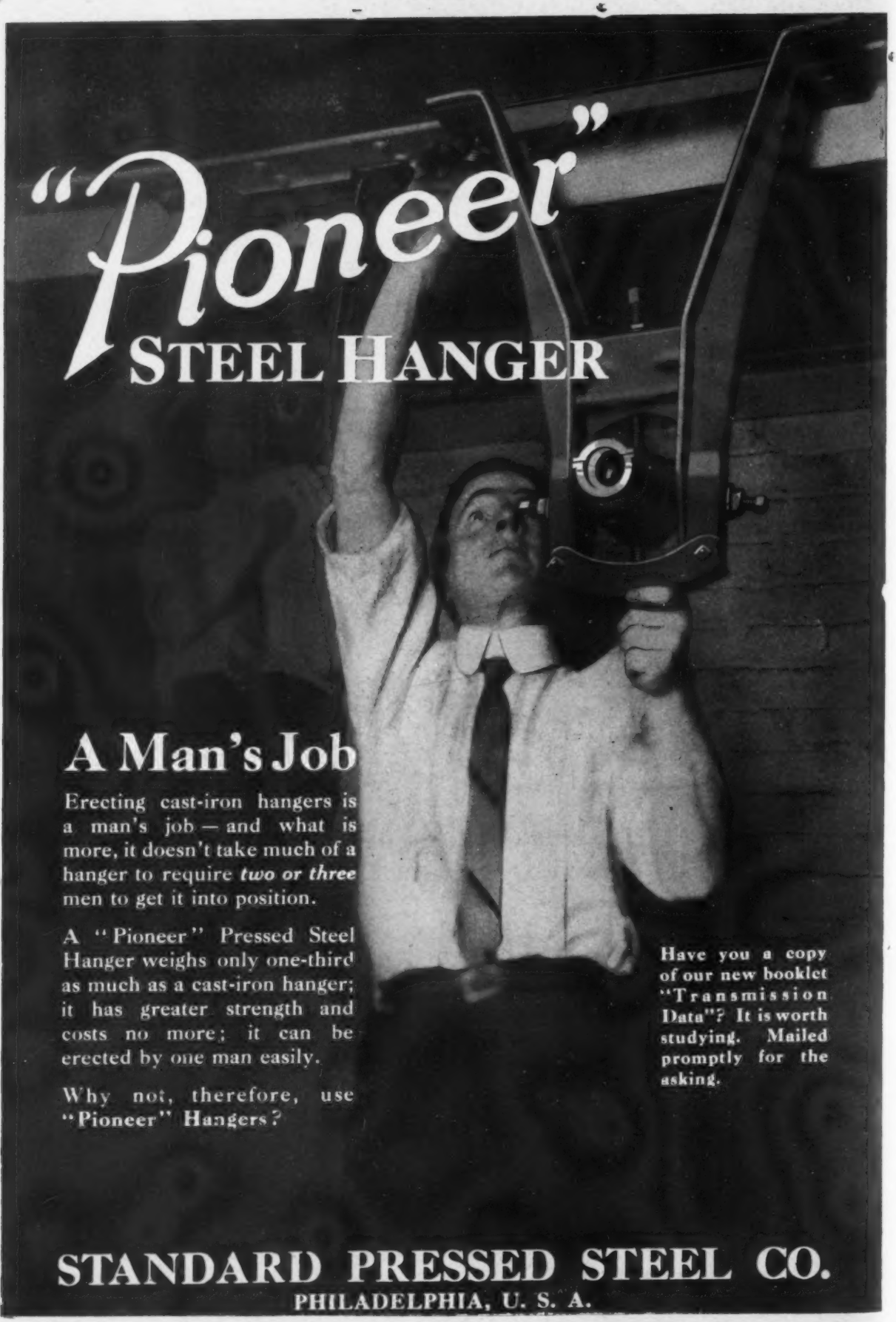
Single row deep groove ball bearings.
Double row self aligning ball bearings.
Thrust Bearings.
Steel balls.
Transmission equipment.

**SKF Industries, Inc.**
165 Broadway, New York City

Supervising at the request of the stockholders
The Hess-Bright Manufacturing Co.
**SKF** Ball Bearing Co.
Atlas Ball Co.
Hubbard Machine Co.
**SKF** Research Laboratories

***SKF** Research Laboratory established at Philadelphia to co-operate with the big Gothenburg Laboratories in the study of the American Manufacturers' friction problems.*

617



# "Pioneer" STEEL HANGER

## A Man's Job

Erecting cast-iron hangers is a man's job — and what is more, it doesn't take much of a hanger to require ***two or three*** men to get it into position.

A "Pioneer" Pressed Steel Hanger weighs only one-third as much as a cast-iron hanger; it has greater strength and costs no more; it can be erected by one man easily.

Why not, therefore, use "Pioneer" Hangers?

**Have you a copy of our new booklet "Transmission Data"? It is worth studying. Mailed promptly for the asking.**

## STANDARD PRESSED STEEL CO.

PHILADELPHIA, U. S. A.

# *All Looms at Greenville Exposition (with one exception) were lubricated with*

TRADE MARK REGISTERED IN
**NON-FLUID OIL**
UNITED STATES PATENT OFFICE

and these looms included every leading make

A significant fact for the mill man:-

That the newest and most modern looms should be lubricated with NON-FLUID OIL, the modern lubricant, at a time when it was desired to have them make the best showing.

In this modern age, fluid oil should be as obsolete as the hand loom. It drips and spatters all over, damaging goods in advanced stages of completion, wasting time in oiling and doubling the cost of lubrication.

NON-FLUID OIL stays in bearings, being adhesive—putting an end to spoilage—lubricating without waste of lubricant—and actually giving **better lubrication at less cost per month.**

Take a tip from the Greenville Exposition—send today for free testing samples and our latest Bulletin on the Lubrication of Textile Machinery. Just fill out the coupon and mail

**New York and New Jersey Lubricant Co.**
**401 Broadway New York**

Southern Agent,
Lewis W. Thomason, Charlotte, N. C.

Warehouses,
Charlotte, N. C.; Atlanta, Ga.; New Orleans, La.

# Three TEXACO Specialties for the Textile Mill:

## TEXACO RABTEX SPINDLE OIL

A light-bodied, straight mineral oil. It is the result of long experimentation and represents the finest oil for the lubrication of Rabbeth or Ring Spindles in textile mills.

The use of Texaco Rabtex Spindle Oil will reduce the power necessary to drive the spinning frame. It is endorsed by the mills using it as the most wonderful spindle oil ever produced.

## TEXACO COMB BOX LUBRICANT

A product specially prepared to meet the difficult conditions encountered in the comb box.

It shows its suitability for the work in two ways:

*FIRST:* **One filling of Texaco Comb Box Lubricant lasts two or three times as long as the other kinds.**

*SECOND:* **In every case we have shown that with Texaco Comb Box Lubricant there is a considerable reduction in frictional temperature of the box. Sometimes this difference exceeds 15 degrees.**

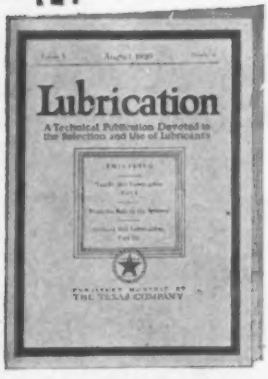
While the reduction of frictional heat through the use of Texaco Comb Box Lubricant is important, it is only a sign of the perfect lubrication secured. And this perfect lubrication means that the wear of the cams is reduced; the accuracy of the setting is maintained—and through this the strength and uniformity of the stock is insured.

## TEXACO TOP ROLL LUBRICANT

A smooth uniform lubricant with the right body for the work. It is practically stainless in use—it does not creep onto the rolls and come in contact with the material.

It does not change its consistency under operating conditions so that a highly desirable uniformity of speed of the top roll is insured, aiding in the even drawing of the stock.

This lubricant is also used on roll necks, cams, differential motions, and draft gearing on slubbers, intermediates, and jack roving frames.




**SEND FOR THE AUGUST AND SEPTEMBER NUMBERS**

The leading articles of these two issues of our magazine "Lubrication" are on "Textile Mill Lubrication." They take you, step by step through every process of manufacture, indicating the right lubricant for every machine, from bale breaker to printing machine.

No theory here — plain, everyday, operating experience, translated into concise recommendations.

One feature that you will like is that we have not overburdened this discussion with any propaganda for Texaco Lubricants. We tell you what KIND of oil to use and then allow you to decide for yourself how well we can supply each and all of your lubricating requirements with Texaco Lubricants.

## *Other Texaco Lubricants are:*

TEXACO, LOOM OIL
TEXACO TURBINE OILS
TEXACO GEAR LUBRICANTS
TEXACO MACHINE OILS
TEXACO ENGINE OILS
TEXACO GREASES

*This Coupon Brings "Lubrication" to you FREE*

## THE TEXAS COMPANY

**Dept. O, 17 Battery Place, New York City**

NEW YORK HOUSTON CHICAGO

*Offices in Principal Cities*

*Kindly send me, free, the issues of "Lubrication" containing the articles on Textile Mill Lubrication.*

*Name* _____ *Street* _____

*City* _____ *State* _____

11-20

# ROBERT AND COMPANY

**ARCHITECTS AND ENGINEERS**
**FOR**
**TEXTILE MILLS AND INDUSTRIAL PLANTS**

**ATLANTA**

*A few of our clients:*

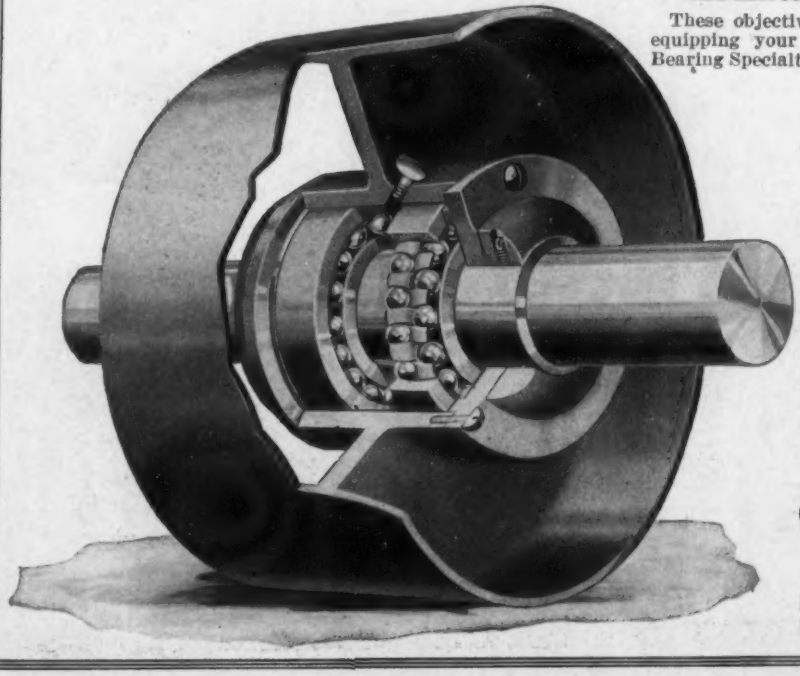
Standard Textile Products Co.
Cannon Mfg. Co.
Jenckes Spinning Co.
Thomaston Cotton Mills.
Bibb Manufacturing Co.
West Point Manufacturing Co.
Dunlop-America Limited.
Separk-Gray Interests.

# THE CHICAGO LINE

*The Daggett Loose Pulley is but one of the Ball Bearing Specialties in the Chicago Line of complete power transmission appliances.*

**Greater efficiency in operation and increased production**

These objectives can be attained by equipping your plant with The Ball Bearing Specialties of The Chicago Line.



**Daggett Ball Bearing**
**Loose Pulley and Clutch Pulley**
**"All Loose" Drive, etc.**

*(S K F Ball Bearing Equipped)*

The value of The Chicago Ball Bearing Specialties is not the price paid for them; but the combination of price and service obtained, coupled with the fact that the first cost is virtually the last—as maintenance, replacement and repair charges are reduced to the minimum.

The constantly increasing installations indicate the appreciation and worth of the Ball Bearing Specialties of The Chicago Line.

*For further information write*

## Chicago Pulley and Shafting Co.

**Main Office: 40 S. Clinton St., Chicago**
**Factory: Menomonee Falls, Wisconsin**

Fig. 1

Fig. 6

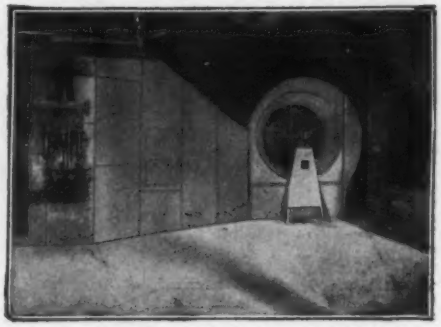


Fig. 8

# American Blower Co. Products

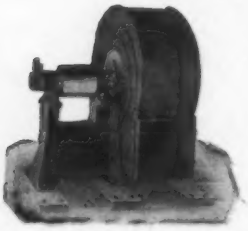


Fig. 2

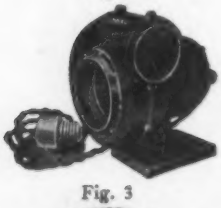


Fig. 3

Fig. 4

Fig. 1—"Sirocco" System of Office Building Heating, Ventilating, Purifying and Cooling.

Fig. 2—Type "E" Exhaust Fan for Exhausting and Conveying Systems.

Fig. 3—"Sirocco" Electric Utility Blower, built in three sizes, for ordinary lamp socket attachment.

Fig. 4—Type "P" Special Steel Pressure Blower for supplying blast to cupolas and furnaces.

Fig. 5—"Sirocco" System of Heating, Ventilating, Cooling and Drying, installed in Factory Building.

Fig. 6—"Sirocco" Multi-Blade Patented Fan Wheel.

Fig. 7—Detroit Tilting Steam Trap—built in Return, Separating, Vacuum and Condensing Types. Used for automatically returning condensation from steam lines directly to boiler without pumping.

Fig. 8—"Sirocco" System of Heating and Ventilating for Public Buildings.

Fig. 9—Type "V" Universal Blower and Exhauster. Entirely reversible as to angle of air discharge with either right or left hand drive. Built for motor or pulley drive.

Fig. 10—"Ventura" Disc Ventilating Fan for handling large volumes of air at low power costs.

Fig. 11—"ABC" Vertical Enclosed Self-Oiling Steam Engine, direct-connected to electric generator. The engine is high speed and of high efficiency—especially adaptable for direct connection to Fans, Centrifugal Pumps, Stokers, Generators, etc.

Fig. 12—"Sirocco" Mechanical Draft Fans supplying draft to two of the largest boilers in the world—2,365 H. P. each.

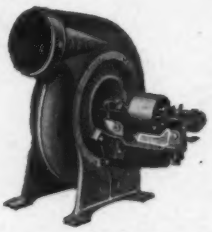


Fig. 9

Fig. 10

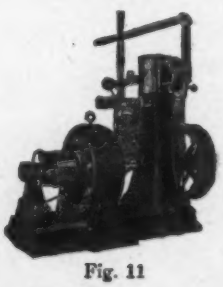


Fig. 11

## AMERICAN BLOWER COMPANY

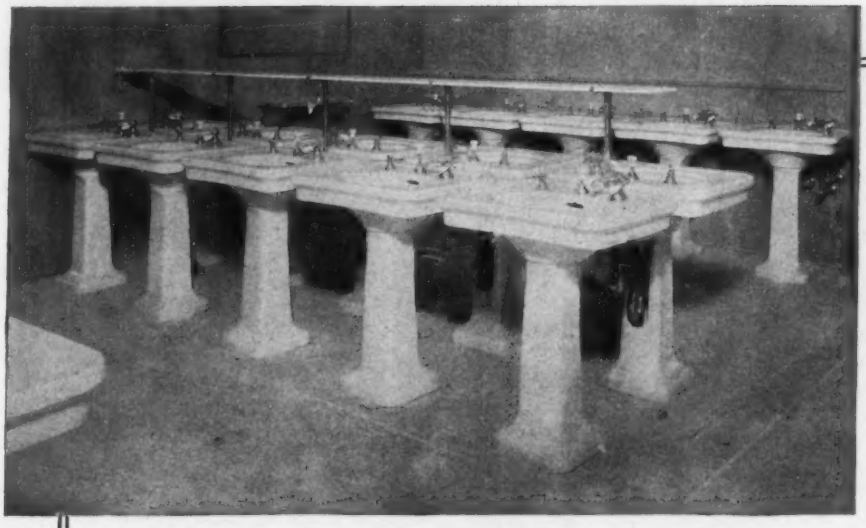
DETROIT, MICH.

"Sirocco"

Fig. 5

Fig. 7

Fig. 12



Corner of
Women's Toilet Room,

Michigan State
Telephone Building

Crane Equipped

# CRANE
# Valves, Fittings, Plumbing Fixtures

**are installed throughout the new office building of the Michigan State Telephone Co., Detroit, Mich.**

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors of pipe, heating and plumbing materials.

1855 —— **CRANE CO.** —— 1920

**836 South Michigan Avenue**
CHICAGO

Branches in Fifty-seven leading cities

Corner of
Men's Toilet Room,

Michigan State
Telephone Building

Crane Equipped

Smith, Hinchman & Grylls,
Architects

Harrigan & Reid,
Plumbing and Heating
Engineers

# The Attractive Mill Village

## is an important factor in securing labor.

THE tendency of the times is toward beauty—and it is universal. Formerly it was characteristic of the wealthy. Now it has found its way into the homes of all classes. The attractiveness of the home, its surroundings and the village as a whole, will play an important part in your labor problems of the future.

The interest of the mill demands *lasting qualities* in the construction of homes for its operatives.

Human nature demands *convenience* of arrangement.

*Comfort* is the inherent right of every human being.

Strictest *economy* at a time of high costs is highly essential in all construction.

**All These—Beauty, Durability, Convenience, Comfort, Economy**

*are the principal features of*

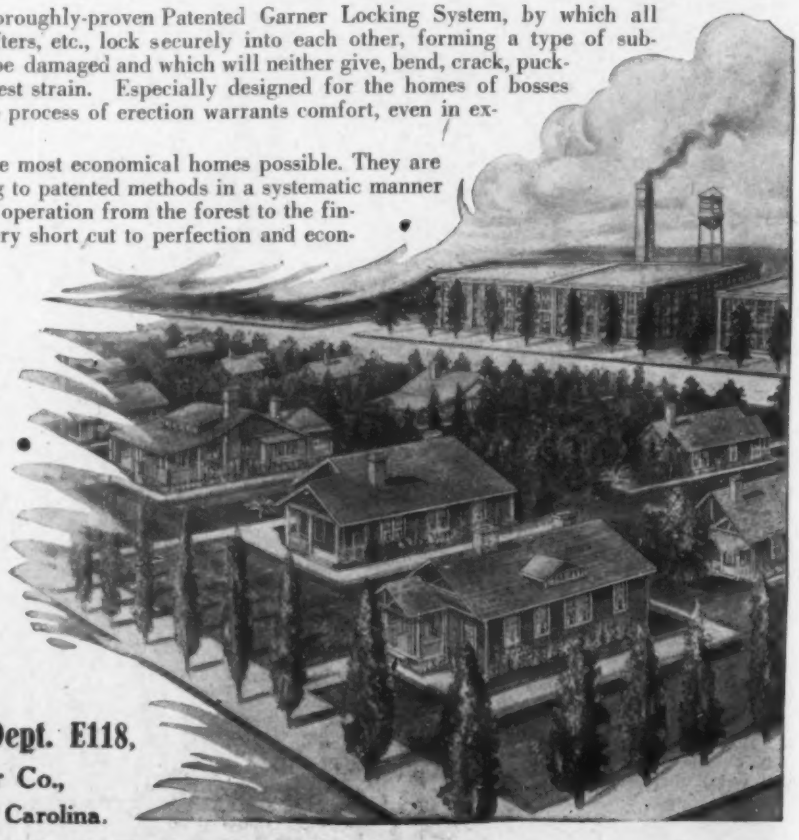
# QUICKBILT
## BUNGALOWS

Snug, attractive, well-planned, artistic, roomy little bungalows especially designed for attractive, industrial villages.

Built after the practical, thoroughly-proven Patented Garner Locking System, by which all sleepers, joists, panels, plates, rafters, etc., lock securely into each other, forming a type of substantial home that cannot easly be damaged and which will neither give, bend, crack, pucker nor warp, even under the greatest strain. Especially designed for the homes of bosses or operatives. The doubly secure process of erection warrants comfort, even in extremes of hot or cold weather.

QUICKBILT Bungalows are the most economical homes possible. They are made in large quantities according to patented methods in a systematic manner by a plant which covers the entire operation from the forest to the finished house. As a result with every short cut to perfection and economy afforded the cost of manufacture is cut in half and all extra middle-men's profits and commissions are avoided. They are sold direct to you from the forest.

Arriving already built with nothing left but the erection, the labor usually necessary for construction is reduced to a minimum. There will be no piles of waste lumber left. Every waste in material, time, labor and money is avoided.



***The Most Logical, Modern, Practical, Economical Method of Home Building.***

*For fuller explanation address*

**QUICKBILT Bungalow Dept. E118,**
**A. C. Tuxbury Lumber Co.,**
**Charleston, - - South Carolina.**

CONSTANT and expert supervision are a vital part of Aberthaw service.

Every operation makes a complete daily report to headquarters, where it is carefully studied.

In addition, a staff of traveling superintendents ensures periodical visitation of all work in process.

A vigilant management means an effective working force. The two spell Aberthaw economy.

# ABERTHAW
## CONSTRUCTION COMPANY

BOSTON ATLANTA BUFFALO PHILADELPHIA

The Favorite Flooring for Modern Textile Mills,
(—and Some of the Good Reasons.)

TU PE LO

**TU-** TUPELO, "The Hard-Wear Lumber," has about every advantage there could be for Textile Mill flooring.

FACTORY FLOORS

The "Hard-Wear Lumber"

**PE-**

IN TEXTILE MILLS

"Works Easy —Wears Hard"

It is a "softwood," yet by reason of its "involved" grain it resists severe friction for many profitable years, without the usual tendency to slivering or splintering. Ask your Efficiency Engineer to investigate Tupelo—and then tell you. We invite correspondence with a serious purpose in it.

**LO**

AND WAREHOUSES

SOUTHERN CYPRESS MFRS. ASSOCIATION

805 PERDIDO BUILDING, NEW ORLEANS, LOUISIANA, or
805 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLORIDA.

# Sawtooth Correctly Used

THE sawtooth roof is no cure-all for bad light and ventilation: there are right and wrong ways to use it.

The *wrong* way is over *any* low, very wide building needing much light and air. A machine shop thus treated is a lost opportunity in design.

The *right* way is as an *auxiliary* feature, on a building narrow enough and high enough to permit light from the sides to reach past the centre. The building shown below illustrates this. Even when it is filled with machinery, there will be no hampering shadows, no objectionable contrast of light and shade, to make clear vision difficult.

The sawtooth is rarely the *best* roof for any purpose; but it is far better than a solid roof, and its exclusion of all direct sunlight is an advantage for certain limited uses.

As manufacturers of LUPTON STEEL SASH PRODUCTS, we are glad to advise our customers on the best arrangement of building and sash to get maximum results. No charge is made for this service.

Write for leaflet, "The Case of the Sawtooth Roof." It tells *where* and *how* to use the sawtooth for good results, and what to use where the sawtooth's limitations render it unsuitable.

DAVID LUPTON'S SONS COMPANY

Amber St. and Allegheny Ave. Philadelphia

*Specialists in daylighting and ventilating equipment for maximum production*

*Chicago *New York *Cleveland *Boston Pittsburgh
*Detroit *Buffalo *Atlanta

*Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto*

**Warehouses in these cities*

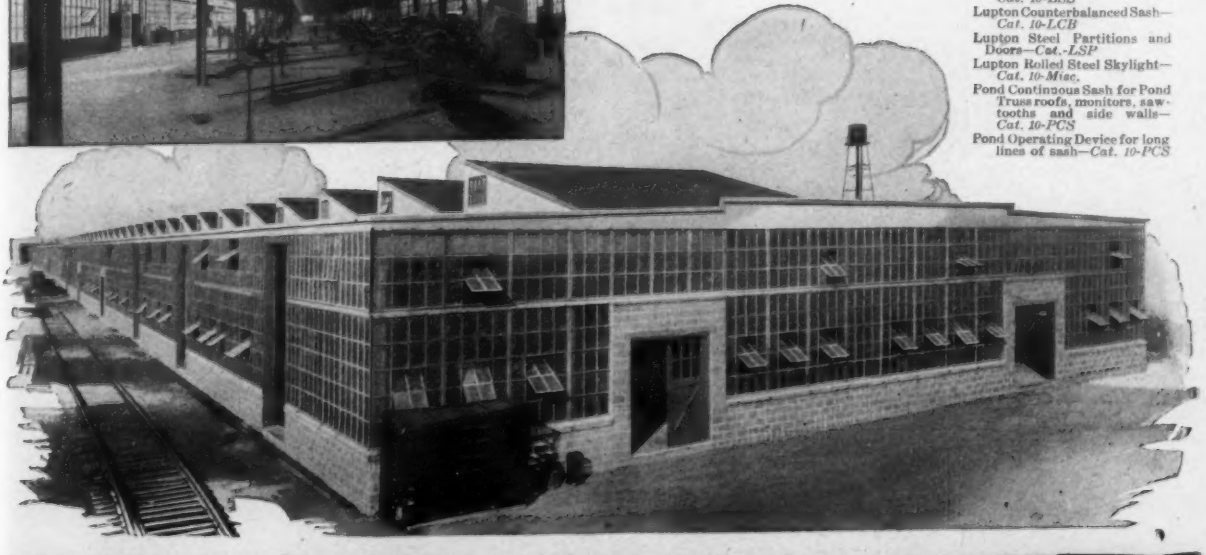
*Westinghouse Electric & Mfg. Co., East Springfield, Mass., Machine Shop.*

*Bernard H. Prack, Architect and Engineer. Building is 100 by 1000 feet, with walls 17½ feet high. Thirty sawteeth in roof, each 30 feet long. Lupton Factory Sash and Pond Continuous Sash used throughout.*

"Today—
the Sash makes the Factory"

Lupton
INVESTMENT VALUE

Lupton Pivoted Factory Sash—*Cat. 10-LSS*
Lupton Counterbalanced Sash—*Cat. 10-LCB*
Lupton Steel Partitions and Doors—*Cat.-LSP*
Lupton Rolled Steel Skylight—*Cat. 10-Misc.*
Pond Continuous Sash for Pond Truss roofs, monitors, sawtooths and side walls—*Cat. 10-PCS*
Pond Operating Device for long lines of sash—*Cat. 10-PCS*



# The Favorite Flooring for Modern Textile Mills,
## (—and Some of the Good Reasons.)

TUPELO

**TU-** TUPELO, "The Hard-Wear Lumber," has about every advantage there could be for Textile Mill flooring.

FACTORY FLOORS

The "Hard-Wear Lumber"

**PE-**

"Works Easy —Wears Hard"

IN TEXTILE MILLS

It is a "softwood," yet by reason of its "involved" grain it resists severe friction for many profitable years, without the usual tendency to slivering or splintering. Ask your Efficiency Engineer to investigate Tupelo—and then tell you. We invite correspondence with a serious purpose in it.

**LO**

AND WAREHOUSES

SOUTHERN CYPRESS MFRS. ASSOCIATION

805 PERDIDO BUILDING, NEW ORLEANS, LOUISIANA, or
805 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLORIDA.

# Sawtooth Correctly Used

THE sawtooth roof is no cure-all for bad light and ventilation: there are right and wrong ways to use it.

The *wrong* way is over *any* low, very wide building needing much light and air. A machine shop thus treated is a lost opportunity in design.

The *right* way is as an *auxiliary* feature, on a building narrow enough and high enough to permit light from the sides to reach past the centre. The building shown below illustrates this. Even when it is filled with machinery, there will be no hampering shadows, no objectionable contrast of light and shade, to make clear vision difficult.

The sawtooth is rarely the *best* roof for any purpose; but it is far better than a solid roof, and its exclusion of all direct sunlight is an advantage for certain limited uses.

As manufacturers of LUPTON STEEL SASH PRODUCTS, we are glad to advise our customers on the best arrangement of building and sash to get maximum results. No charge is made for this service.

Write for leaflet, "The Case of the Sawtooth Roof." It tells *where* and *how* to use the sawtooth for good results, and what to use where the sawtooth's limitations render it unsuitable.

DAVID LUPTON'S SONS COMPANY
Amber St. and Allegheny Ave. Philadelphia

*Specialists in daylighting and ventilating equipment for maximum production*

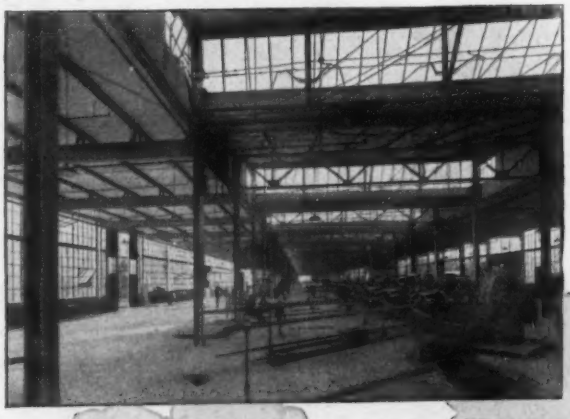
*Chicago *New York *Cleveland *Boston Pittsburgh
*Detroit *Buffalo *Atlanta

*Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto*

**Warehouses in these cities*

*Westinghouse Electric & Mfg. Co., East Springfield, Mass., Machine Shop.*

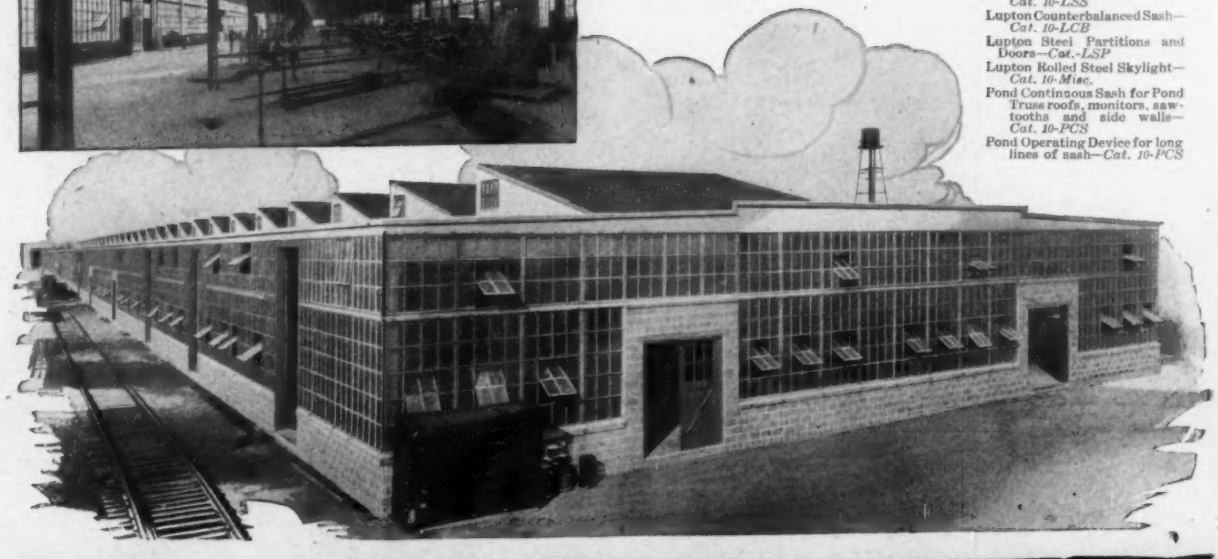
*Bernard H. Prack, Architect and Engineer. Building is 100 by 1000 feet, with walls 17½ feet high. Thirty sawteeth in roof, each 30 feet long. Lupton Factory Sash and Pond Continuous Sash used throughout.*



"Today—
the Sash makes the Factory"

Lupton
INVESTMENT VALUE

Lupton Pivoted Factory Sash—*Cat. 10-LSS*
Lupton Counterbalanced Sash—*Cat. 10-LCB*
Lupton Steel Partitions and Doors—*Cat.-LSP*
Lupton Rolled Steel Skylight—*Cat. 10-Misc.*
Pond Continuous Sash for Pond Truss roofs, monitors, sawtooths and side walls—*Cat. 10-PCS*
Pond Operating Device for long lines of sash—*Cat. 10-PCS*



THE FUNCTIONS OF THE ENGINEER

# To Decrease the Cost of Production

***No. 1:---The Boiler House.***

The market has reversed itself. Now the greater emphasis is not on production at any cost, but on a lower cost of production.

The factory's or the textile mill's problem at this moment is not only more machines or more production from the same machines, but a reduced cost of operation.

A much neglected field for reducing manufacturing expenses is found in the power plant. This is the more remarkable because the boiler house and engine room offer the most lucrative field for effecting economies with the least change of equipment.

These opportunities for real economies would be far-reaching even without the existing fuel situation which so greatly enlarges the possibilities.

The trained and experienced Engineer can point the way to many economies which can be effected advantageously at this time.

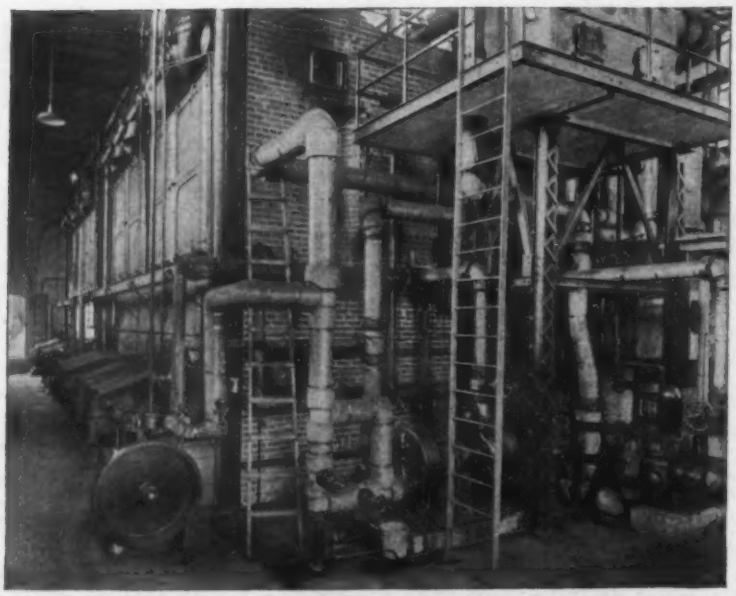
Some of these conditions are discussed in "Picks to the Minute" (on textile mills) and in "Factories for the Future." Write for either or both.

J. E. SIRRINE & COMPANY
*Engineers*

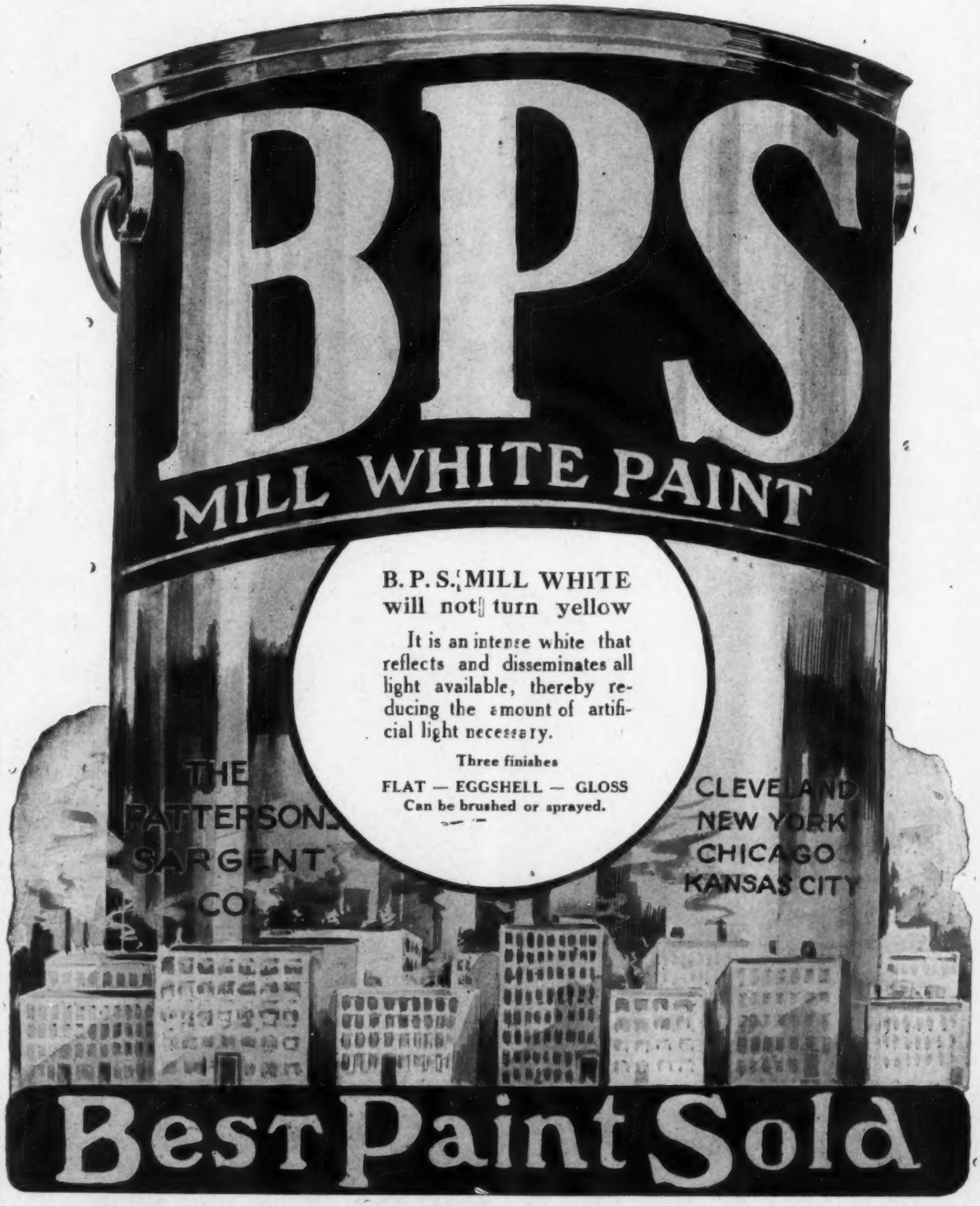
GREENVILLE
SOUTH CAROLINA

331 Madison Avenue
NEW YORK CITY

S
SERVICE



*To secure the most return out of the power plant, it must be designed for a naturally efficient operation and provided with proper measuring and recording devices so that its efficiency may be determined and maintained. Boiler room of Exposition Cotton Mills Atlanta, Ga.*


BPS
MILL WHITE PAINT
B. P. S. MILL WHITE will not turn yellow
It is an intense white that reflects and disseminates all light available, thereby reducing the amount of artificial light necessary.
Three finishes
FLAT — EGGSHELL — GLOSS
Can be brushed or sprayed.
THE PATTERSON SARGENT CO.
CLEVELAND
NEW YORK
CHICAGO
KANSAS CITY
Best Paint Sold

# *Solving Your Paint Problems*

**Pee Gee Millite**
on walls and ceilings reflects sunlight and daylight in every corner, every machine.

**Pee Gee Cottage Paint**
economically protects exterior surfaces against wear and weather. Holds its color.

**Pee Gee Velkoatt**
a durable paint for inside walls, dries hard and may be washed with soap and water.

Our Service Department places at your command, without any obligation whatsoever, the knowledge and experience of our chemists. These men will take your paint problems and solve them to your complete satisfaction.

Dealing with this department takes every element of chance out of your paint purchases, and assures you that when the paint job is completed it will be of lasting satisfaction to you, and at lowest possible cost.

Put your paint problems up to the PEE GEE Service Department.

***Varnishes—Stains—Enamels***

*Write for Folder on PEE GEE Industrial Paints*

## *Peaslee-Gaulbert Co.*

INCORPORATED

*Paint Grinders* *Est. 1867* *Varnish Makers*

**Louisville, Kentucky**

# John W. Ferguson Company

AND

## MICHELIN TIRE CO

SUMMER and Winter, since 1907, Ferguson has built for the Michelin Tire Company.

28 contracts in all have been carried to completion, and two are now in process of construction.

Manufacturing buildings, housing projects, storehouses and additions to existing structures are included.

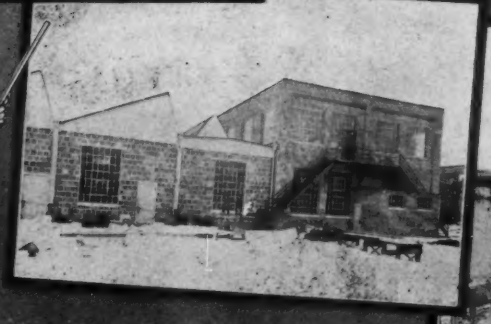
318,970 square feet of floor area, exclusive of the housing project, have been built for the Michelin Plant by this organization.

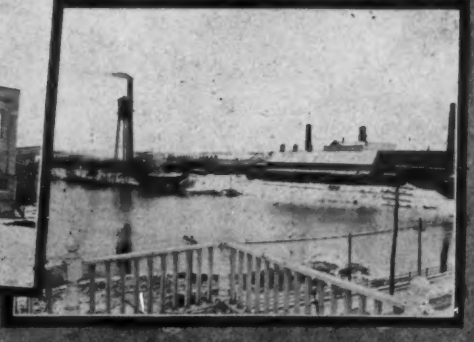
Since the first contract was completed, whenever Michelin has built, Ferguson has done the work, because experience has proved to Michelin the worth of Ferguson service.

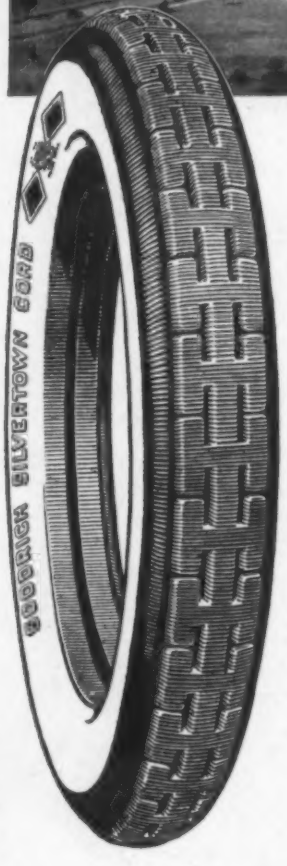
John W. Ferguson Company

PATERSON N.J. NEW YORK N.Y.

65-109








# The B. F. Goodrich Co. and Tropical Paint & Oil Co. Products

EVERY motorist knows the B. F. Goodrich Co. of Akron. Its Silvertown Cords have won merited praise for appearance and extra milage.

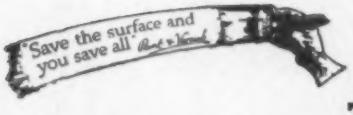
And as Goodrich Tires stand high with the motoring public so do Tropical Paint & Oil Co. products stand high with the Goodrich Co.

In both appearance and in service Tropical reliability has been proven to Goodrich.

But this is not unusual. The Goodrich Co. is only one of many great industries now using Tropical products.

Why? Because for many years we've specialized in paints for industrial use. We've perfected formulae for all surfaces and conditions.

Take advantage of our paint knowledge. Let one of our specialists analyze your paint problems and make suggestions. No obligation—just a part of our valuable service.




**THE TROPICAL PAINT & OIL CO., CLEVELAND, O.**

# TROPICAL

## Paints—Enamels—Roofing Materials

*N. C. Walker, Architect. Sellers & Padgett, Contractors* *Hamilton Carhartt Cotton Mills, Rock Hill, S. C.*

# WindoWalls—and Blue Denim

THE Hamilton Carhartt Mill No. 2, at Carhartt, S. C., is run entirely on blue denims, used in the manufacture of the well known Carhartt Overall.

Here is a product that requires ideal lighting conditions because the warp threads are dark blue, and the weft threads pure white. The dark blue thread is exceedingly hard to see under ordinary conditions, but, in the Carhartt Mill, Fenestra Steel WindoWalls admit a flood of daylight to every loom and thread. Whether the thread be dark blue or pure white, it can be located easily, and the time consumed in mending broken threads is considerably lessened.

Mr. B. L. Ivey, Resident Manager of the Carhartt Mill, recently wrote us as follows:

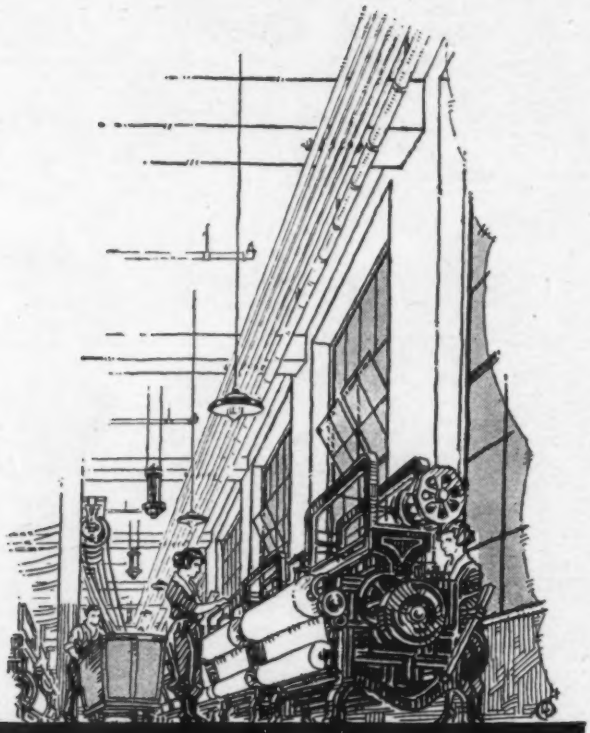
"We are very much pleased with Fenestra, and in addition to this mill being equipped throughout with Fenestra Steel Sash, we are equipping our new store building with it. We consider that the use of Fenestra affords us considerable fire protection, also."

**Detroit Steel Products Company**
**4414 East Grand Boulevard, Detroit, Michigan**

**Fenestra**
STEEL WINDOWALLS

OJACO

MILL·WHITE



THE tiny defects that will occur in even the most carefully woven fabric are best revealed when natural daylight, diffused and deflected by whitened ceilings and walls, reaches into every nook and cranny of the weaving room.

OJACO Mill White has the faculty of making daylight do double duty. The light that enters through the windows is reflected onto workers and machinery in a glow that penetrates the most remote corners. The OJACO Mill Whitened factory, shop or mill is easier to keep clean, easier to do good work in and sure to turn out more and better goods.

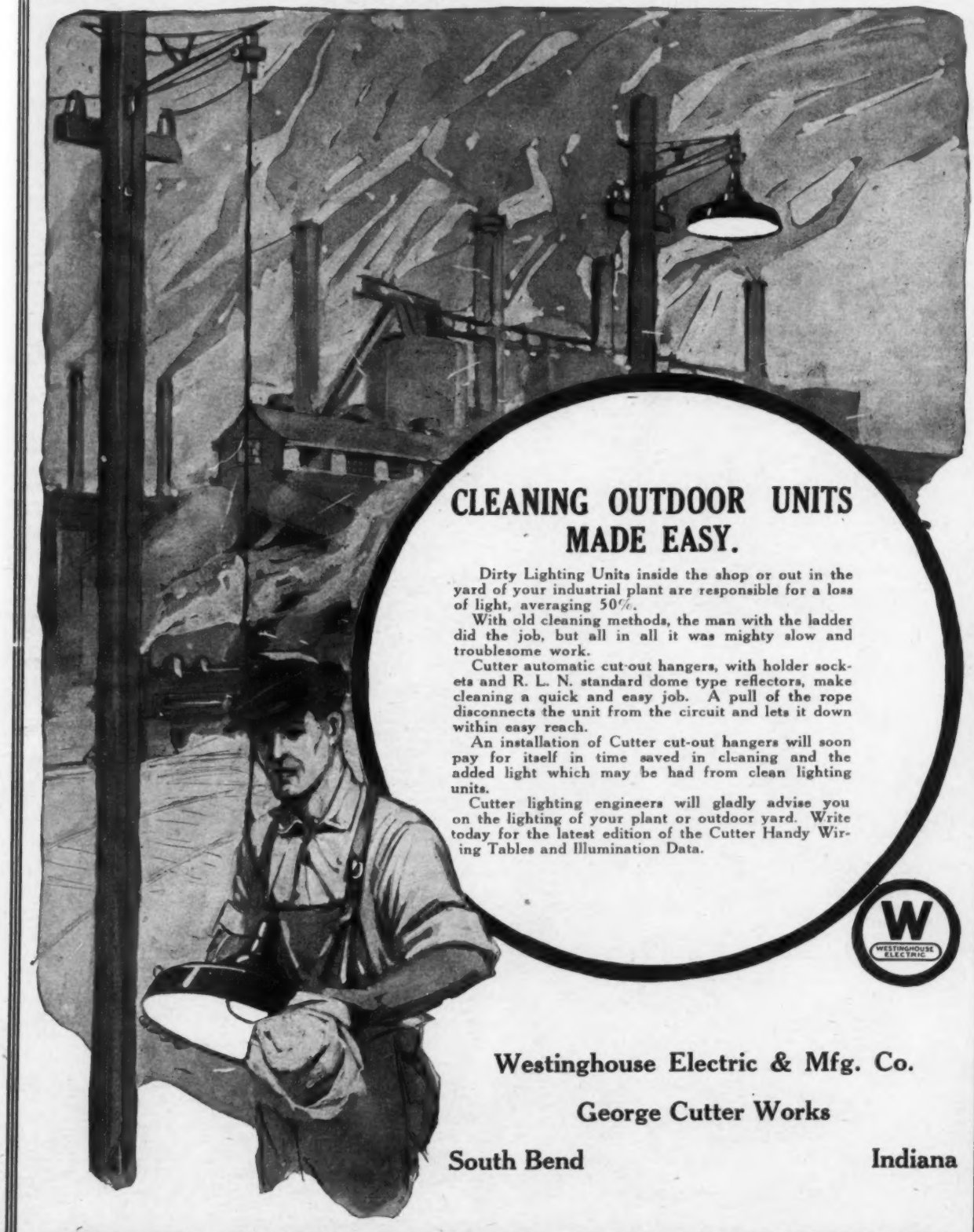
Right now is an excellent time to think of making your plant more efficient by painting with OJACO Mill White. A letter or telephone inquiry will bring to you all the information you may want.

OLIVER JOHNSON & CO., Inc.

*Paint Makers*

PROVIDENCE, RHODE ISLAND

DISTRIBUTORS: Cowles & Bleckley, Atlanta, Ga.; Charlotte Supply Co., Charlotte, N. C.; B. A. Cook Co., Fitchburg, Mass.; J. B. Farnum Co., Woonsocket, R. I.; Alexander Grant's Sons Co., Syracuse, N. Y.; Wm. F. Harticon, Fall River, Mass.; Lewis E. Tracy Co., Boston, Mass.; F. P. Van Hosen Co., Rochester, N. Y.; M. F. Bragdon Paint Co., Portland, Me.; Dwelle-Kaiser Co., Buffalo, N. Y.; Finney & Fuller Co., Inc., Utica, N. Y.



# CLEANING OUTDOOR UNITS MADE EASY.

Dirty Lighting Units inside the shop or out in the yard of your industrial plant are responsible for a loss of light, averaging 50%.

With old cleaning methods, the man with the ladder did the job, but all in all it was mighty slow and troublesome work.

Cutter automatic cut-out hangers, with holder sockets and R. L. N. standard dome type reflectors, make cleaning a quick and easy job. A pull of the rope disconnects the unit from the circuit and lets it down within easy reach.

An installation of Cutter cut-out hangers will soon pay for itself in time saved in cleaning and the added light which may be had from clean lighting units.

Cutter lighting engineers will gladly advise you on the lighting of your plant or outdoor yard. Write today for the latest edition of the Cutter Handy Wiring Tables and Illumination Data.

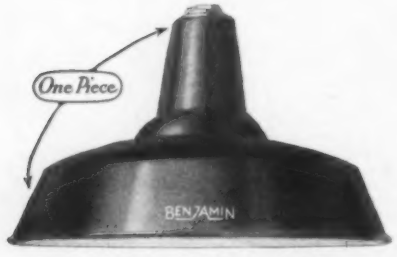
W
WESTINGHOUSE ELECTRIC

**Westinghouse Electric & Mfg. Co.**

**George Cutter Works**

**South Bend** **Indiana**

# WESTINGHOUSE




Benjamin R.L.M. Reflector Socket
One-Piece Seamless Porcelain
Enamel Steel.

*The Benjamin Reflector Socket is a combination of a one-piece reflector and the necessary wiring apparatus. A continuous smooth surface of porcelain enameled steel, inside and out, is opposed to the effects of gases and moisture.*

# "The New Shop Sure is a Fine Place to Work"

"Since I've been over here, the old pay envelope's been fatter than ever. Why?—take a look at the lights. Those Benjamin Reflector Sockets put just the right amount of light on my work and it's a comfort to my eyes.

"I was talking to the engineer when they put up the new shop and he said, 'You can do better work and not get so tired if the light on your work is just right!' He knew what he was talking about—the first thing I noticed over here was how much more cheerful the fellows are. I've been getting out more work since I've been over here—but I don't have a headache at quitting time any more. The foreman says this shop is doing lots better than the old one.

"And Bill, the fellow that changes the lamps and cleans the reflectors, says these Benjamin Reflector Sockets have the easiest porcelain surface to keep clean of any he ever worked on. He says they don't stain and grime-up, so we'll be getting this good light we have now for a long time to come.

"I hope they put Benjamin equipment in the old shop—I'd hate to go back there with the old-style drop-lights they use there."

There is a Benjamin Reflector Socket with which to secure Correct Illumination under all conditions. Benjamin Illumination Engineers will gladly co-operate with Architects, Engineers or Contractors regarding correct industrial illumination in new or old plants. Ask for literature on correct industrial illumination.

*Address the Advertising Department, 806 W. Washington Blvd., Chicago*

**BENJAMIN ELECTRIC MFG. CO.**

*Factories:* Chicago and Desplaines, Ill.

*Sales and Distribution Offices:*

New York Chicago San Francisco Toronto, Canada London, England

**BENJAMIN PRODUCTS**

The following are divisions of Benjamin products on which we will be glad to send you information:

Industrial Lighting Div.
Electrical Division (including Benjamin Two-Way Plug)
Pressed Steel Products Division
Enameled Products Div.
Starrett Panel Board Division

**BENJAMIN**

Makers of Things More Useful

# CONDULETS

*ZG SERIES CONDULETS* are furnished in a variety of types to meet mill conditions.

*Condulet the Job*

## Loom Motor Condulets

100% production demands a 100% equipment. If you expect maximum output, give careful thought to all details of your electrical installation.

The switch which controls your loom motor requires a suitable mounting surface and the cutout which protects the motor must be enclosed so as to eliminate the fire hazard due to dust and lint. The ZG Series Condulets are designed for this purpose and completely meet the requirements.

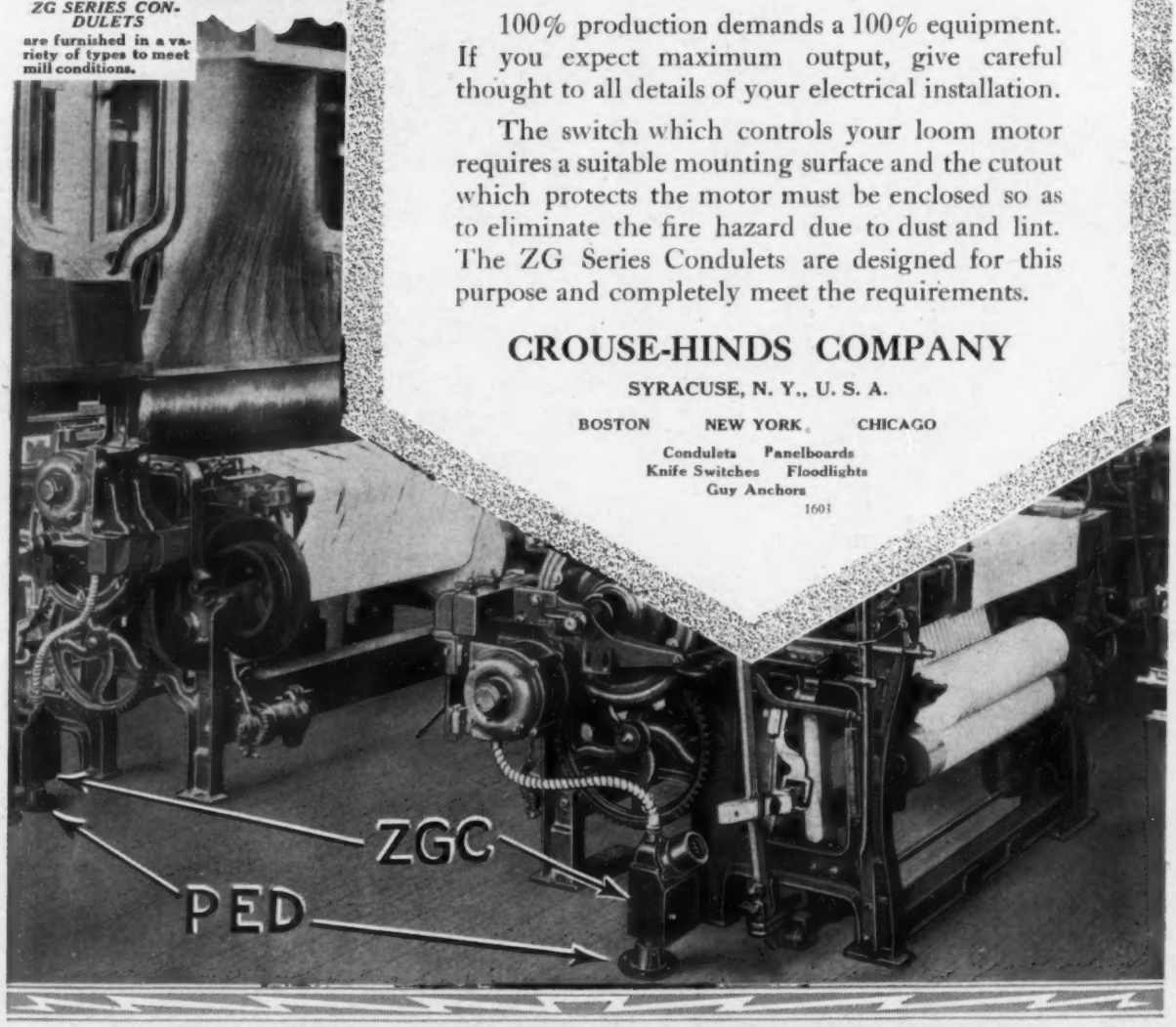
**CROUSE-HINDS COMPANY**

SYRACUSE, N. Y., U. S. A.

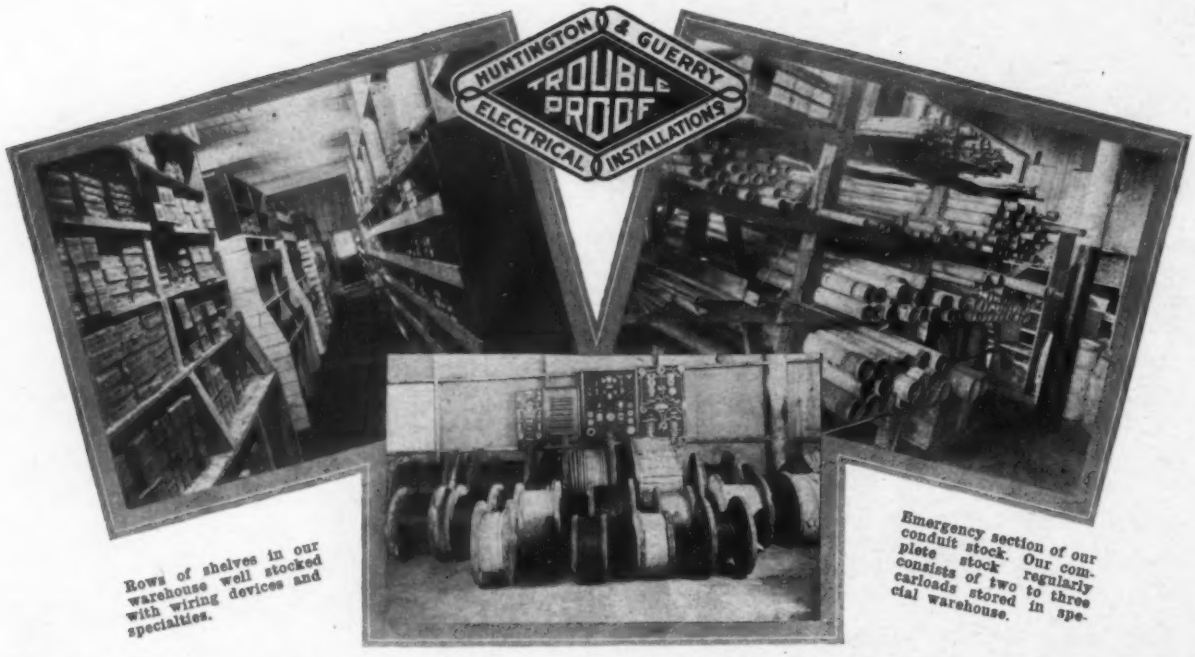
BOSTON NEW YORK CHICAGO

Condulets Panelboards
Knife Switches Floodlights
Guy Anchors

1603




# CROUSE-HINDS




Rows of shelves in our warehouse well stocked with wiring devices and specialties.

Portion of our stock of wires and cables to show variety of size and types carried. Our complete stock regularly consists of 12 to 15 tons.

Emergency section of our conduit stock. Our complete stock regularly consists of two to three carloads stored in special warehouse.

## *Large Stocks Mean Prompt Service On "Trouble-Proof" Electrical Installations*

Our own building with 20,000 square feet of floor space not only houses our executive offices and complete electrical repair shops, but regularly contains two or three carloads of conduit, twelve to fifteen tons of wire and cable, all kinds of electrical devices and accessories to match—a regular stock large enough to wire one or two cotton mills of average size.

We maintain this stock exclusively to give our customers prompt service on wiring installations, and this stock is not for general sale.

This means that when your electrical work is placed with us, there are no hold-ups and delays, and your production will not be decreased.

The cost of electrical installations placed with us will be the absolute minimum for the quality and service rendered, and you have the satisfactory feeling that it is in safe hands, both technically and financially—that come what may, it will be completed in the least time, in full accord with the best practice, and that it will be turned over to you safe to operate and guarded in every way possible against interruption of service and undue depreciation arising from faults of installation.

We believe that these claims will be attested by the clients for whom we have handled electrical construction for the past six years.

***"Yours for Service and Satisfaction"***

## *Huntington & Guerry, Inc.*

**River & Hammond Sts.** **Greenville, S. C.**

DOW

A VAT DYE for fast color ginghams and chambrays
Excellent fastness to washing and Chlorine
Entirely suitable for dyeing yarn and raw stock

THE DOW CHEMICAL COMPANY — MIDLAND, MICHIGAN

MIDLAND

BLUE R.

*For sale by*

ANILINE DYES
and CHEMICALS, Inc.

Cedar and Washington Streets
New York City

*Branches:*

Boston
Philadelphia
Chicago
Columbus, Ga.

Two Profits
There is both a financial and a human profit in the increase of illumination in the factory or mill. Managers are of course interested in the eye-saving results of better lighting but the financial profit is so positive and unmistakable that it alone justifies a complete change of lighting system when that is necessary. The addition of IVANHOE Reflectors—correctly designed, selected and installed—may entirely suffice in your case. We shall be glad to put you into communication with a man near you who can advise intelligently as to your needs, the cost, and the profit you can reasonably expect from a modern installation.
IVANHOE-REGENT WORKS
of General Electric Co.
CLEVELAND, OHIO
"Ivanhoe" Steel Reflectors, Lighting Glassware, Anderson Self-Adjusting Arms, and Illuminating Service.
"Service to Lamps"
IVANHOE
SHADES-REFLECTORS

*In many cities production can be increased, its quality improved, and new industries added by efficiently making and using the available power*

G-E Equipped Hydro-electric Plant

## *How electricity increased and improved a textile city's production*

EACH mill in a certain textile city was driven by its old water-wheel—production was low, so was quality.

In summer, low water and leaky canal beds slowed up the wheels—in winter, anchor ice did the same.

Finally, G-E textile mill specialists were called in to suggest a better way of using the water power.

A central water power plant was built to supply all mills with electric power and provide a surplus for new industries.

Electric drives at each mill applied power directly to productive machines, and losses due to mechanical drives were largely eliminated.

Machinery was enabled to operate at a constant maximum productive speed.

Its output was increased 35% and a very much better product resulted.

Any community's efficiency may be increased manifold by the proper utilization of Nature's resources and the application of electricity in homes, industries or on farms.

*Look for this mark of leadership in electrical development and manufacture*

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

MILL POWER DEPARTMENT, BOSTON, MASS.

# G-E motors

*From the Mightiest to the Tiniest* 4-20

GENERAL ELECTRIC COMPANY

## LANE'S UNIQUE RATCHET TOOLS

**"OFF-SET" RATCHET SCREW DRIVER**

This tool was designed for working in close quarters, where the work cannot be reached by a straight handled screw driver.

The Ratchet Features enable the operator to use this Tool in a very narrow space and at the same time secure a very great leverage.

The BITS are milled square at tips, thus securing a perfect fit in screw slots, which also prevents lifting out of the slots, as is the case with tapered tips.

The handle is 6 inches in length, drop-forged and case-hardened. Two accurately milled Bits, made from highest grade screw driver steel, are furnished with each Tool.

Packed in individual Paper box.

Weight, 5 ounces.

**LIST PRICE $2.00**

**Sold by Jobbers Throughout the World.**

**Manufactured by**

**WILL B. LANE UNIQUE TOOL CO.**

**180 N. Dearborn St., CHICAGO, ILL.**

## FIBRE REENFORCED SHUTTLES

# BOOST

## PRODUCTION

**Write**

**Shambow**

**Woonsocket, R. I.**

THE ATLANTA BRUSH COMPANY has for years concentrated on the production of **BRUSHES** that would be strictly practical for all Mill Purposes.
That this idea was a sound and practical one is proven by the large list of Repeat Orders.

# FOR FELCO BRUSHES

from a steadily growing list of Progressive Mills in the South as well as from those of the North and East.

**Distributors for**

**GARVEY STENCIL AND MARKING INK**

**A non-evaporating waterproof Marking Ink which is impossible to rub off. COMES READY FOR USE.**

**We Manufacture and Repair Brushes of Every Description.** **A Request Will Bring Our Catalog and Prices**

## ATLANTA BRUSH COMPANY

**Successors to**

**133 1-2 Central Avenue** **D. D. Felton Brush Co.** **ATLANTA, GA.**

# COTTON

Published Monthly by

**W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.**

**L. L. ARNOLD, Editor.** **R. W. PHILIP, Associate Editor.**

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The name of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

**Member Associated Business Papers, Inc.**
**Member Audit Bureau of Circulation.**
**This Issue 6,000 Copies.**

**Volume 85** **No. 2**


# CONTENTS


EDITORIAL—

Watch Washington! ..... 81
Cotton Growing in Mesopotamia ..... 82
A Novelty in Rugs ..... 82

GEENERAL AND TECHNICAL—

The Scrubbing of Mill Floors ..... 83
Blending Wool and Cotton ..... 89
Lancashire Cotton Industry and Its Foreign Trade.. 91
Finishing Drills for Shoe Linings ..... 92
The Practical Technic of Mule-Spinning ..... 95
Tannic Acid ..... 97
What the Southern Mills Are Doing ..... 99
Cotton Comment .....104
The New England Mill Situation .....107
Export Trade in the Cotton Industry .....109
Notes About Men You Know .....112

HOW OTHER MEN MANAGE—

The Action of the Bale Breaker .....115
Cutting Labor Costs per Pound .....116
Watch the Drawing Frames .....116
The Requisites of a Good Foreman.....117
Making Clean Yarn.....119
A Hank Check List for the Carder.....119
Continue Social Service .....121
Three Knitting Questions .....123
Analysis for Materials Used .....123
The Employment Manager .....125
Drafting .....126
All Published Answers Are Paid For .....127
Two Carding Problems and Their Solution .....129
Finishing Plant Pointers .....131

KNITTING SECTION—

Analysis of Knit Fabrics .....135
To Remedy the Cancellation Evil .....136
The Knit Goods Market .....137
The Wage Situation .....139
Among the Knitting Mills .....141
An Effort at Cost Finding .....143
Pennsylvania Knitters Meet at Reading .....143
A Conference on Uniform Contracts .....145
The Yarn Market .....149
The Knit Goods Exhibition .....152
A Direct Motor Drive .....152

## Dependable Paint

is that which gives many years of service. It should be bought on this basis of service rather than the price per gallon.

### DIXON'S Silica-Graphite Paint

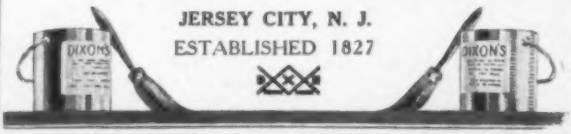
has an enviable reputation for long service and satisfied users in all parts of the world and on all types of structures.

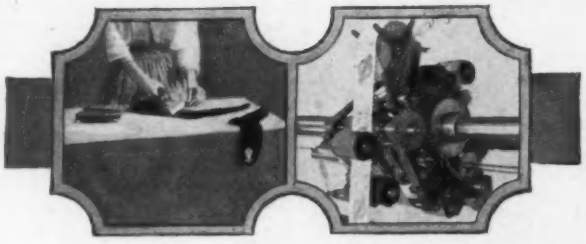
Because of its pigment, flake silica-graphite—combined by Nature—it is better enabled to withstand wear and deteriorating agents such as: dampness, acids, alkalies, etc. The vehicle is the best linseed oil obtainable.

You will be interested in Booklet No. 34 B and our new Color Chart. Write for them today.

**JOSEPH DIXON CRUCIBLE CO.**

JERSEY CITY, N. J.
ESTABLISHED 1827



Two ways to apply them—by hand or by machine.

Two ways to use them—as trade-marks and as end-stamps.

Two ways to get full facts about 'em—write us or telegraph.

**Kaumagraph** (REG. U. S. PAT. OFF.)
**(Dry) Transfers**
"The Practical Way"

**KAUMAGRAPH COMPANY**

Sole Manufacturers 209 West 38th St., New York
136 Federal St., Boston. 219 So. Dearborn St., Chicago

**JORDAN MANUFACTURING CO.**

BOBBIN MAKERS

Home Office and Plant No. 1
**MONTICELLO, GEORGIA.**

## J. S. HULME

Atlanta Trust Co. Bldg., ATLANTA, GA.

Economy Presses.
Clenzall Dye Machines.
Watson Motors.
Water Softening Systems.
Green Houses.

## GARLAND

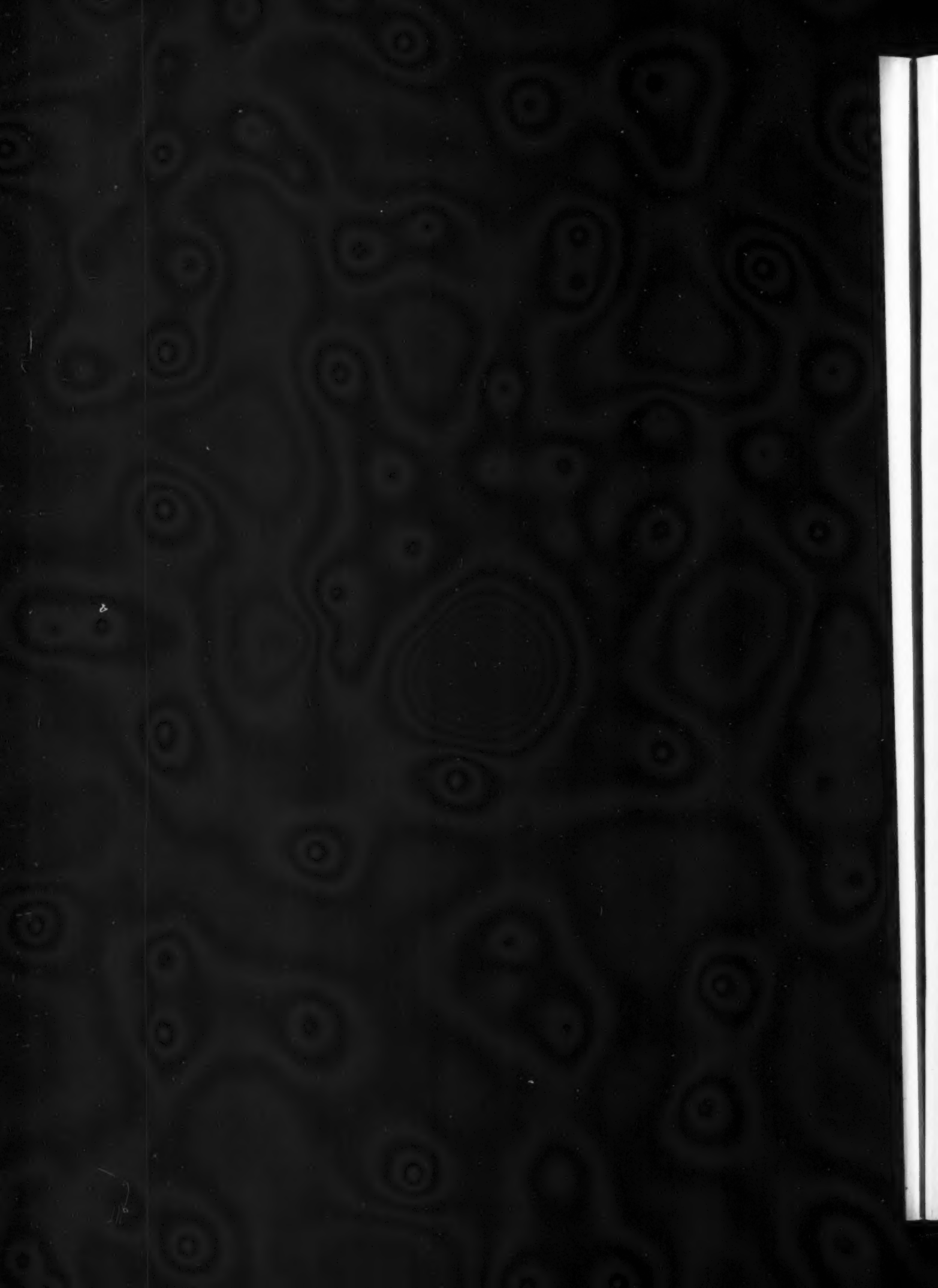
GARLAND Harnesses ARE BEST FOR MACHINE Drawing

Our harnesses are especially well adapted for machine drawing because of the alignment of the eyes and their shape. The eyes always stand square throughout the length of the harness and they are of just the right length and opened just enough to produce the best possible results in machine drawing. Our harnesses are as near perfect for machine drawing as it is possible for a harness to be made.

TRADE MARK

**GARLAND MFG. CO.**
SACO, MAINE

Formerly Loom Picker Co., Biddeford, Maine



# With the Publishers—

## Southern Bankers on the Business Outlook

Indications of better times for the South are seen by leading bankers and financiers of the Southeast, according to letters they have written to M. B. Wellborn, governor of the Federal Reserve Bank of Atlanta, in response to a letter from him asking their views on the situation and the best ways to meet the process of deflation and readjustment.

A feeling of confidence and hopefulness is expressed by all the letters. It was indicated by several that the period of deflation appears to be nearing its end.

"Taken as a whole," Mr. Wellborn commented, "these letters show that business leaders of the South are meeting the difficulties of the readjustment period in the same splendid spirit which characterized all our people during the war. They are ready for the sacrifices or temporary inconveniences which the situation brings upon us, and show the kind of cheerful and clear-headed courage which always wins. With these qualities they manifest a fine spirit of cooperation and willingness to 'help the other fellow,' provided the other fellow will help himself."

G. GUNBY JORDAN, president Third National Bank, Columbus, Ga.:

Deflation naturally follows war prices, as night does the day. The South is a favored part of America, and America is the hope of the world. We are not going to suffer from coal shortage to any serious extent. We have had good crops generally, and while the prices are not as high as some particular growers of different commodities would wish, yet in the interest of the whole people a shrinkage of values was necessary and proper.

FULLER E. CALLAWAY, head of twenty-three manufacturing, commercial and financial companies, LaGrange, Ga.:

Now that we are actually experiencing it, anyone can see that the present deflation and depression is the natural reaction from the excessive inflation of the war period. Trying, even painful, as it may be for most of us, we should take heart from the fact that it is a necessary preliminary to our getting back on a solid foundation inspiring confidence and from which a fresh start can be made. I think the most important thing is for us not to lose our heads or our nerves.

JOHN K. OTTLEY, president Fourth National Bank, Atlanta, Ga.:

Readjustment is a process requiring steadiness and courage, plus a determined optimism. I can see nothing to be gained by lamenting and fretting over conditions that can be improved only by sincere effort and in a cheerful spirit of cooperation.

MILLS B. LANE, president Citizens and Southern Bank, Savannah, Ga.:

I do not think we have an over-production of anything, but the panic in cotton and sugar has depressed all commodity prices, and as soon as the cloud passes over, I am anticipating a very prosperous period for this section.

JOHN J. WILKINS, president Georgia National Bank, Athens, Ga.:

By reason of adjustments incident to the termination of a world war, the markets and exchanges of the world for the time being are disturbed and as a result the horizon financially, commercially, industrially and agriculturally is a little clouded "but behind the clouds the sun is still shining."

THOMAS E. KILBY, chairman of the board, Anniston National Bank, Anniston, Ala.:

While the country is passing through a period of depression the condition is not alarming and I can see no particular reason for a pessimistic feeling.

W. W. CRAWFORD, president American Trust and Savings Bank, Birmingham, Ala.:

Our section of the country having been quite prosperous for the past few years, surely we are in good condition to meet the present situation in an optimistic mood rather than a pessimistic one.

TOM O. SMITH, vice-president Birmingham Trust and Savings Company, Birmingham, Ala.:

There are sufficient loanable funds in the banks of North Alabama to handle the situation for some months longer, while some of our people are in a position to finance themselves until the next crop comes in. To my way of thinking, all we have to do is to meet the situation half way, and like Mark Tapley, smile in the face of adversity and our burdens will be transformed into blessings.

P. D. HOUSTON, president American National Bank, Nashville, Tenn.:

It is my opinion that the business of the country will hold to a fair volume during the next few months, and by that time the present spell of apathy will have been forgotten and business will go on at a normal rate. Ours is the greatest nation on the earth and the South is the most independent section thereof. I have the greatest faith in our future prospects and our condition now is more mental than one of reality.

STERLING FORT, president Northern Bank Trust Co, Clarksville, Tenn.:

We are either rich or poor in our own minds, and as I see it now we are inclined to magnify the situation in our minds more than we are using our heads to meet and adjust it.

ARTHUR F. PERRY, president Florida National Bank, Jacksonville, Florida.:

The dreaded time which was looked forward to with such apprehension has arrived, and the readjustment is progressing without panic or violent economic disturbance, which fact should animate us all with pride. The South has been so prosperous for the past few years that it is in admirable condition to meet the present situation without difficulty.

W. R. IRBY, president Canal-Commercial Trust & Savings Bank, New Orleans, La.:

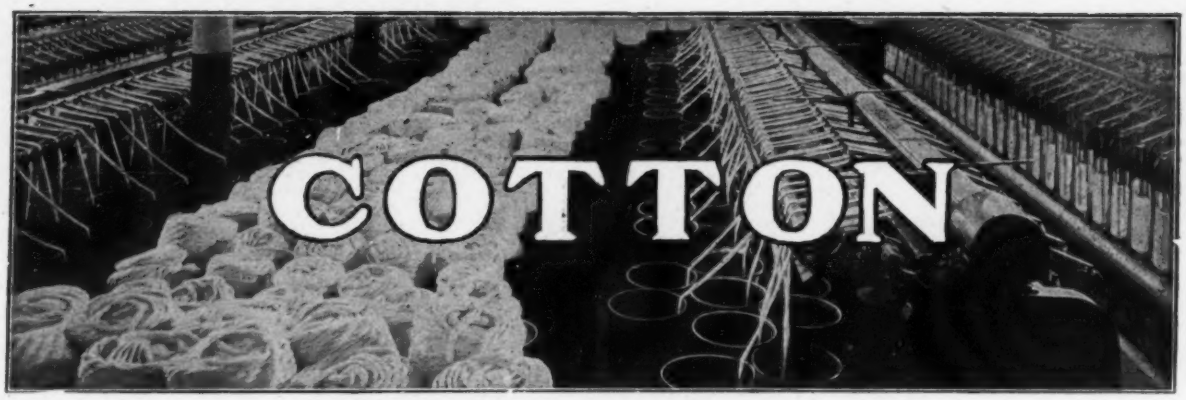
The present situation is caused by overexpansion, which is the natural accompaniment of unusually high prices and seemingly unlimited demand for everything at these prices. The backward swing of the pendulum was inevitable. The resources of this section are ample to meet all the obligations and carry forward the necessary work.

# AMONG COTTON'S READERS

**James D. Hammett**
President and Treasurer Orr Cotton Mills and
Chiquola Manufacturing Company
President South Carolina Cotton Mfrs. Association

"It is difficult to understand just how the men engaged in the manufacture of cotton can intelligently attend to their duties unless they are informed as to what others are doing through such periodicals as COTTON."

J. D. Hammett




## December, Nineteen-Twenty

### Watch Washington!

Watch Washington! Next year's taxes will determine next year's profits. To a great extent, they will determine next year's prices.

Time was, when the burden of government taxation rested but lightly on the shoulders of the nephews and nieces of Uncle Sam. Few of them knew where the money came from that kept the government running. Beyond the internal revenue stamps on cigars and liquors, the average citizen had little contact with the government tax collecting powers. But those days will never come again. The days of indirect and invisible—we might almost say unfeelable—government taxes are gone and gone forever. Uncle Sam sends us his tax bills direct now, and they are real ones.

Is it any wonder that every industry is watching the labors of Congress at Washington, with double interest and double anxiety? Extravagance at Washington means high tax bills—high tax bills mean low profits.

The wheels of Congress are in motion now. The present session has but a few months to run. It is a dying Congress and it will do little that it can avoid doing. It is the tail end of the Sixty-sixth Congress—the Third session of the Sixty-sixth Congress, they call it in the official records. The Sixty-seventh Congress has already been elected, to take power the moment the present Congress dies, when President Harding is sworn in at noon on March 4. As a matter of fact, the new Congress will not get down to work until the special session to be called by President Harding convenes in April. Then it probably will stay in session for many long and busy months. It will sit through the spring and summer and fall of 1921. It will merge into the Second session of the Sixty-seventh Congress on the first Monday of December, 1921, and then it will sit on through the winter and the next spring. Sometime in the summer of 1922, the speaker's gavel will fall in the House of Representatives for the last time. Then there will be a sine die adjournment until the final session of the Congress meets, as required by the Constitution, on the first Monday of December, 1922, to wind up the affairs of the Sixty-seventh Congress at a short winter session, and make room for the Sixty-eighth Congress on March 4, 1923.

But through all these months, the labors of the Congress will center largely on matters that raise or lower the taxes of the United States. The mere passage of laws, as such—to keep us good and our hands out of each other's pockets—is but a small factor in this task. Four-fifths of the time of Congress will be spent in spending money and in raising taxes so as to have more to spend. The Republicans who have undisputed sway in the three houses, the House of Representatives, the Senate and the White House, have promised to be careful. There is to be downward revision of appropriation bills, upward revision of the tariff, and if possible downward revision of taxes. How far these promises can be kept, remains to be seen. It is far too early now to speculate much upon that question. Campaign promises of economy are easy to make. Nor is it a difficult thing to break them. The temptation to spend money we have always with us. The war bred habits of governmental extravagance which it is going to be hard to change. The fact that during the war the money was raised by selling bonds and that now we will have to raise the money by taxes will have an influence in checking lots of expenses. But it will take a stronger influence than that to curb some of the temptations at Washington to dip into Uncle Sam's moneybags and scatter the golden rain.

During the last two years, in which a Republican Congress had to make appropriations for a Democratic administration, the inclination to economy had the additional support of the fact that it was a Democratic officeholder who got pried out of office when the expenses were cut down. It will be somewhat harder to pull the pursestrings too tight when Republican patronage is at stake.

There is every indication, however, that a new influence will have to be reckoned with this time. The taxpayer is likely to be heard from now on in the nation's councils. Before the war, the taxpayers had little to say. The income tax was still pretty light, and the income taxpayers were few. If they said anything about the iniquity of wasting government money, they were called plutocrats or malefactors of great wealth and chased away from the steps of the capitol. About 350,000 individuals filed income tax returns before the war. Now they approximate 4,000,000. Besides this, every youngster that buys a plate of ice cream has to contribute a penny to Uncle Sam, and the little taxpayers can make quite as much noise as the big ones when they hear that Congress is too lavish with the nation's money. It is the cumulative influence of this army of taxpayers that ought to have some effect in curbing the Congressional tendencies to extravagance when the

grist of appropriation bills threatens to incease taxes. During the war, this cry of the taxpayer was drowned out by the clamor of Mars. Now the taxpayer can make himself heard, and he probably will.

We may even have a picture of the taxpayer opposing the views of the ultimate consumer in the forthcoming tariff revision upward. In past revisions of this kind, the ultimate consumer has had considerable to say about the importance of revising tariffs downward. In those days, only the industries immediately concerned in the question of protection, seemed to have a real interest in asking higher customs duties. But now every cent of customs duties makes one cent less necessary in the way of income and special taxes, so the taxpayer has an interest also in seeing that the customs tariff does its duty in the way of putting money into Uncle Sam's coffers.

The present tariff, for instance, netted something like $320,000,000 last year on a total importation of more than $5,000,000,000 worth of foreign goods. Had the Aldrich-Payne tariff been effective, and had the import total remained unchanged, the duties collected would have been between $900,000,000 and $1,000,000,000. And the extra $600,000,000 or $700,000,000 might have been deducted from the other taxes collected by Uncle Sam. What this means can better be described by saying that it is more than twice the total sum collected under the war tax law for the same year. It is more than twice the tobacco taxes for the year and more than three times the tax on beverages. This sum is more than twice the total received from luxury taxes, manufacturers' excess taxes and the long list of other similar taxes. It totals eight times the amount received from documentary stamp taxes or the amount received from taxes on theatre admissions and club dues. It is six times the amount received from estate and inheritance taxes.

So the taxpayer has a vital interest in the size of future customs levies, just as he has a vital interest in the size of future government expenditures. It gives him also a vital interest in such questions as the possibility of reviving "bonus" legislation to appropriate something like $1,500,000,000 for the soldiers of the late war. In the same way, he has an interest in finding out just what is going to happen to the $10,000,000,000 which the United States advanced to its associates in the war and to the $500,000,000 of interest on this sum which the treasury has not yet begun to collect.

It is by all means a taxpayer's year. He should not need to be reminded that his watchword should be:

"Watch Washington!"

## Cotton Growing in Mesopotamia.

It has been held for some time that there are bright prospects for cotton growing in Mesopotamia and in 1918 Captain R. Thomas of the British Indian Agricultural Service was appointed to carry out experiments with different varieties. A report on his work has now been published.

In 1919 experiments were undertaken on six farms in different parts of Mesopotamia with the most promising varieties, but were not very successful, owing to lack of funds and the saline nature of the soil. During the present year (1920) it was hoped to establish seed farms, and obtain sufficient seed for commercial cultivation in 1921. During a visit towards the end of 1919 members of the British Cotton Growing Association were favorably impressed with the possibilities, and although no definite agreement has yet been entered into with the Government it is understood that the association has already sent ginning plants to deal with the cotton from 200 acres. Labor and water supply are, of course, essential conditions. With regard to the former, it is estimated that the population between Bagdad and Basra is about 1,500,000 of whom 350,000 are town dwellers. It is further estimated that there are about 300,000 acres on the banks of the Tigris and Euphrates which could be irrigated from the rivers themselves, about 80,000 acres by canal irrigation for summer crops on the banks of the Diala, above Bagdad, and about 120,000 acres on the Euphrates controlled by the Hindia barrage. If, therefore, cotton is grown in rotation on about one-third of the summer irrigated land, the area would be about 150,000 to 200,000 acres of cotton per annum. But before this is realized a great deal of work is required, and the next step is with the irrigation engineers. The rainfall varies considerably; the mean annual is about 10 inches, but in 1894 the rainfall was 22 inches, and in 1901 it was only 1.6. The soil generally is light calcareous loam, somewhat similar to the average soils of Egypt, but the temperature extremes are greater than in Egypt.

## A Novelty in Rugs.

A new type of rug, brilliant in coloring with gorgeous sunset tints, thick, soft, durable and moderate in price, is ready for some enterprising Americans to introduce into the rug market. This is the hand-woven rug of Albania. A time is certainly coming when the Albania rug will grace thousands of summer cottages and bungalows in America.

Not so soft and light as the Navajo blanket, these rugs are twice as thick, twice as durable and many times warmer. Made to last for generations they are "just the thing" for the front porch or damp tent floor and their striking color combinations commend them to the holiday atmosphere of the vacation home. Water cannot hurt them. The man who seeks an extra rugged blanket to add to his camping kit need have no fear of sleeping in the rain under an Albania rug, while the enthusiastic canoer has a canoe-mat par excellence.

Whereas a fine Bokhara carpet takes months in the weaving and sells in America for hundreds or thousands of dollars, depending on its size and quality, the Albania blanket rug can be woven in a few weeks and its cost in America, if the rug is eight by five feet, would range between thirty and one hundred dollars.

When purchased from the weaver in Albania, a native rug would never cost more than ten dollars, and the average rug can be had for less than five.

The American Red Cross Commission for the relief of Albania has found, in many instances, that it was cheaper to buy native rugs for distribution to the needy than to import American blankets. In many Red Cross hospitals and dispensaries scattered throughout that impoverished country, the bright-hued rugs, woven by the peasant women of the hills from threads spun by hand on ancient spindles, make warm coverings for the beds of the sick.

# The Scrubbing of Mill Floors

BY ASE CRUBBER.

(ALL RIGHTS RESERVED BY THE AUTHOR.)

Unquestionably, the scrubbing of floors is now an institution in all progressive textile mills that endeavor to build up, and retain, a contented and efficient working force. In establishments that employ large numbers of boys, scrubbing by means of these lads has several advantages. In the first place, the expense of maintaining a special scrubbing corps can be eliminated; secondly, the scrubbing is done in a comparatively short time, say, an hour or two; and, thirdly, the floor on account of the large area scrubbed at once presents a better appearance than does the patchwork washing of single adult scrubbers.

The regular routine work on days set aside for scrubbing should be arranged so that the services of all the boys are available during the floor cleaning period. A little practice generally suffices to develop sufficient ingenuity to bring this about. Naturally, no interference with the productive capacity of the machinery must occur. The idea is to concentrate in an hour or so the spare time that the boys usually have.

## Equipment.

Since it is essential that the work be expeditously done, care must be exercised that the equipment is in good condition. Mops, for example, to be effective in their function—the drying of the wet floor—should have the filler of such materials as possess a rapid capillary attraction. Cotton seems especially good in this connection, and old bands, of the twisted variety, or strands of yarn waste can be pressed into service.

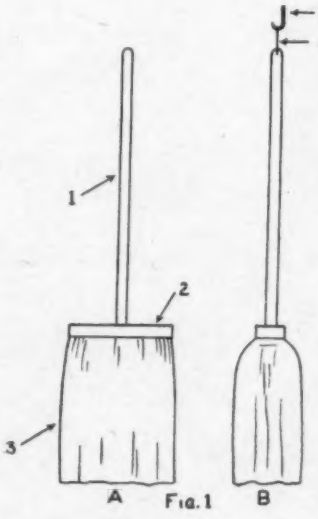


FIG. 1

To facilitate understanding the terms used, reference may be made to Fig. 1. Here, (A) represents a side view of an assembled mop; the figures (1), (2), (3), denoting, respectively, the handle, filler-holder, and filler. The filler-holders may be of wood or metal; the handles, as a matter of economy, may be taken from discarded brooms. (B) gives an end view, and also illustrates the manner of hanging up the mops to individual hooks (h) by means of the cord (4).

Taylor, in his scientific management work, found that efficient shoveling requires the size of the shovel to be varied with the changing material shoveled. Now, while there has, perhaps, been no scientific investigation conducted to determine the proper size and weight of mops, the following data may be found suitable as a guide.

Referring again to Fig. 1, it may be said that the usual length of broom handle, 42 inches, is just about right. The filler-holder (2) can be 8 or 9 inches in length, and the filler extends to approximately an inch from each end. About 18 inches makes a good length for the filler (3). To go beyond this would tend to make it difficult to swing the mop properly; whereas, on the other hand, a shorter length would decrease the capacity for saturation. Five or six pounds, after the excess water has been wrung out, will be found an easily manageable weight—a greater weight would tax the strength of the boys too much.

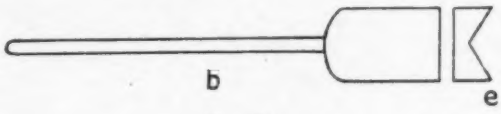


FIG. 2

Mops should be examined at regular periods, and those with worn or scanty filler sorted out. Such mops do not dry the floor properly, and are a constant source of friction among the boys because the latter are apt to quarrel for the possession of the lightest mops. Entrusting one person to look over the mops will tend to keep them fit.

Old sweeping brooms can be used for scrubbing, as the shortened corn make them stiffer and better able to remove dirt. They should be trimmed evenly with a sharp knife or a hatchet. Fig. 2 shows a broom (b) ready for scrubbing, after the ragged end (e) has been trimmed away.

The cans used in pouring the hot water on the floor should be of the nozzle and two-handle type, of which a good one is that in Fig. 3. Sometimes a sprinkling can (the ordinary garden variety) may be used with good effect because it insures an even distribution of water.

Galvanized pails of about three gallons capacity can be used to transport the water used in the scrubbing. If desired, trucks holding two or three pails may be used to convey the clean, hot water to the place of scrubbing, and bring back the dirty, picked-up water. As a preventive of scalding, the trucks are to be recommended.

FIG. 3

It is essential that enough mops be kept on hand so that once the scrubbing is in progress no hitch will retard its early completion. One finds, quite frequently, that the wringers cannot keep pace with the mopping; and for this reason it is suggested that at least three mops be provided for each mopper. This number will enable each mopper to use one mop while one is being wrung out, reserving the third for an emergency.

## Scrubbing.

It is, perhaps, scarcely necessary to say that everything and everybody should be ready at the moment of scrubbing: water, brooms, mops, boys, and so on. The floor should be previously sanded, the pails of water at their respective,

conveniently located places, the brooms in good trim, and the mops ready for use.

In throwing sand on the floor, caution is required in that none of it be strewn on rings, spindles, and other parts of the machinery. A circular, sweeping action of the hand and arm, held low, will enable one to throw sand evenly and without any evil after effects.

SCRUBBING SCHEDULE.

| No. of Boys | Duty |
|---|---|
| 1 | Boiling water |
| 1 | Distributing pails of hot water |
| 1 | Pouring-on |
| 4 | Scrubbing |
| 1 or 2 | Wringing mops |
| Remainder | Mopping, including |
| 2 | Mopping unders |
| 1 | Finishing alleys |
| 1 | Conveying mops. |

FIG. 4.

Both scrubbers and moppers had better go barefoot, as the danger of slipping is usually less than if they wear shoes or rubbers, and they can get about more actively.

A schedule of the disposition of the boys at scrubbing in the order in which they begin their duties is shown in Fig. 4. Although the schedule indicates a scrubbing personnel of four scrubbers and one person pouring the water, this can be changed to two scrubbers and one boy pouring, if circumstances make such an arrangement advisable.

That the scrubbing move on quickly, it is essential to have the water placed at the various alley ends, cross alleys, and other handy spots. The boys themselves soon learn just where the water is best placed, and the lad who carries the pails back and forth can leave them where designated. One boy should be stationed at the sinks or wherever the outlet for the hot water, or the steam, is situated. His duty consists in keeping up the supply of hot water for distribution. Another thing! He should be started on his job long enough in advance of the moment of commencing scrubbing operations so that an adequate supply will be on hand for the scrubbers. No delay should be brooked! If a hitch occurs, find out the cause and immediately take steps to correct it.

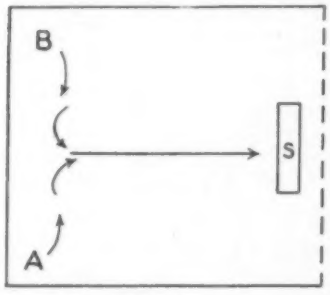


FIG. 5

One good way of making the scrubbing proceed smoothly is to use the same boys for the several duties at each scrubbing period. Not only does each worker know his place and duty, then, but should a vacancy occur, it is only necessary to break in one boy for that job.

In the matter of mops, it is advantageous to have some one carry the dry mops to a conveniently located place near the point of scrubbing. This will be found a great time-saver! The moppers, to be sure, deposit their wet mops in another heap; and the same boy who brings the dry mops removes the wet ones. Dry, of course, is here only a relative term, because the mops simply have the excess water wrung out of them—they are not actually dry.

A practical plan of procedure in scrubbing will now

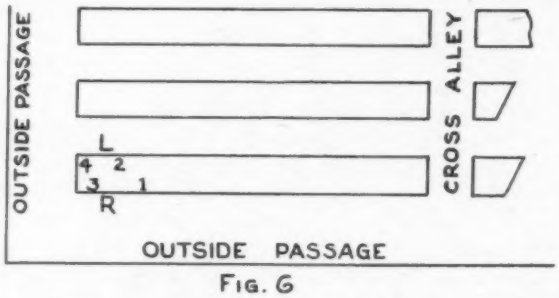


FIG. 6

be outlined. Since a diagram usually helps the understanding, one is given in Fig. 5. First of all, it may be said that the scrubbing should be started at some corner, as at (A), and proceed in a regular fashion through the room. The point (A), moreover, is farthest from the sinks, so that no part of the floor already scrubbed will be soiled by subsequent scrubbing, or trampling over by the boys. This can be taken care of, as in Fig. 5, where a section is shown. Sinks are indicated by (s), one of the main aisles by the arrow leading to the sinks, the starting point at (A) and the direction by the curved arrows toward the center aisle. After the latter is reached, the other side of the room is cleaned, starting operations at (B) and working toward the center. By having the work done in this way, the parts scrubbed can dry up clean, and the scrubbing performance with its dirty water is finally disposed of at the sinks.

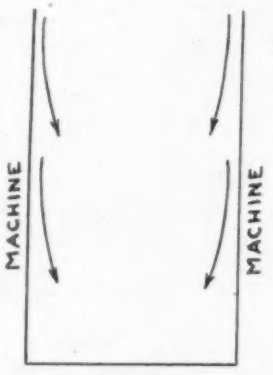


FIG. 7

FIG. 9

Everything pertaining to scrubbing, indeed, should be carried out as efficiently as possible—no unnecessary duplication of effort, work well done, and with the least avoidable loss of time.

When the floor under the machinery is to be scrubbed, two boys are delegated to each side of the machinery, for instance at (L) and (R), Fig. 6. The boys are placed in alternate consecutive order, as seen by the positions, 1, 2, 3, 4. The first scrubber on the side on which the water is being poured leads (in this case, No. 1, in the outer alley), and as he scrubs, he pushes the water to the other side; the boy opposite him, No. 2, pulls the water from

beneath the machine; the third lad supplements the first one's efforts, and a fourth on the opposite side follows up the chap on his side. The other side of the machine next receives the water, the scrubbers simply going in the reverse direction, and pushing the water to the opposite side. Only two scrubbers need be used on the unders if these are not dirty; the other two can begin directly on the alleys. The section-hand on the supervising job can judge best in this case, and proceed accordingly.

Next, the outer alley receives attention. Two watered scrubbings, followed by a third final brooming, to remove surplus water in the alley is the usual routine; but if extra cleanliness is desired, the third brooming may have just a little water. It is sometimes customary to use cold water at this last time; the theory being that the counter effect of hot and cold—expansion and contraction—aids the cleaning action.

Since the alleys are generally scrubbed after the unders of the adjacent rows of machinery are done, care must be used by the scrubbers to see that no water is pushed underneath the machinery when they scrub along the alleys. In-

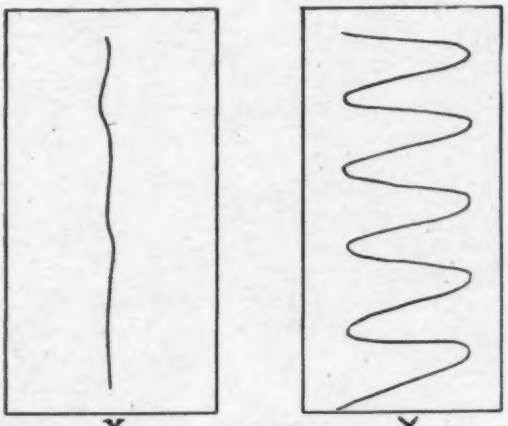



FIG. 8

attention to this detail will mean more work, and consequently more time lost, in the mopping. A pretty good way of preventing the water from running underneath the machinery is to start the initial movement of the brooms at that part of the alley nearest the machinery and finish at a point four or five inches away from the edge. The arrows in Fig. 7 indicate the path of the brooms.

More than one realizes, perhaps, the secret of a clean floor depends not a little on the even distribution of the water by the pourer-on. He should proceed backwards, his can moving with regular lateral movements, causing a uniform deluge over a uniform area. The habit—often developed by unthinking youths, and condoned by careless sectionmen—of turning forwards, and pouring the water in a steady stream in only the center part of the aisle should be forbidden. Streaky floors will be the inevitable result, particularly in those departments of the mill that have much oil and grease splattering over the floor; as, for instance, in the twisting department. In Fig. 8, (X) is an alley in which the water has been poured in a straight line. A little reasoning will show that the sides of this alley will not be as clean as the alley (Y) which has been properly watered. The comparison tells the tale.

There is another practice that should be frowned on, and this is: putting the brooms in the pails of water and then scrubbing the floor. The dirty brooms sully the water so that by the time the brooms have been immersed three or four times the water is practically unfit for use. Always have the water poured directly on the floor!

Not only should the scrubbers move their brooms so that

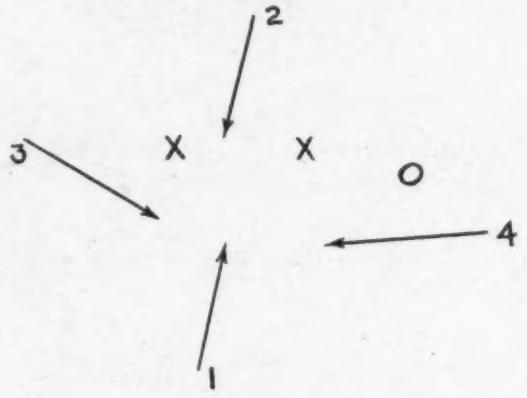



FIG. 10.

they cover their respective allotments of the alley, but they should also exert some pressure on the brooms in order to clean the floor. Boys are careless in this matter and must be watched with a vigilant eye.

Right here, another time-saver will be mentioned. It is the method of handling the brooms so that the excess water can be fairly well cleared off without too many broomings. Observation has shown that when the operation is performed as in Fig. 9 little water will be left behind. A study of the sketch shows that the brooms (for the sake of simplicity just two are given) move in unison, covering the alley from side to side in a thorough fashion. The first movements are indicated by 1a, 2a, the second by 1b, 2b, and so on down the alley.

To prevent the dirty water from finding its way through the floor and into the room, or cellar, below, where considerable damage may be done, it is well to pick up the excess water at the completion of scrubbing each alley.

About picking up the water. There is a little knack about doing this job that must be known in order to do it efficaciously. Where room permits, all four scrubbers can assist in the proceeding. A glance at the diagram, Fig. 10, will give an idea of how the thing is done. The lad pouring on the hot water picks up the dirty water. He assumes a stooping posture with feet straddled as seen at the two crosses, both hands gripping the extreme ends of a dustpan which is held at a slight angle downward and almost between the feet.

Now as the boy directly in front of him gives his broom a forward push, the stooping lad brings the edge of the dustpan to the floor, thence forward until it is almost flat on the floor. In this way the dustpan meets the oncoming water and as the latter rushes over the edge, the receptacle is tipped up to retain as much water as possible and then moved to one side and emptied into a pail placed on either left or right side, whichever happens to be the most convenient.

Naturally, the water not taken up in the dustpan continues flowing on and will pass to the rear of the picker-up. The chap in back (No. 2) now gets busy and as the picker-

up lifts the pan toward the pail, he shoves the water back toward the scrubber in front. Simultaneously, the two scrubbers on the sides (No. 3 and No. 4) push their share of the water inward and forward in the direction of the first scrubber. Only one person—the boy in front—should endeavor to fill the dustpan. Like many cooks spoiling the broth, too many brooms will fill the dustpan, leaving little room for the water. Some time and coaching is necessary before the lads learn their several parts in picking up, and can time their individual movements properly. But when they do, how the water does leap from the floor!

At this point attention may be drawn to the fact that the water in the case just mentioned had to be taken from the floor. Where openings, leading to drain pipes, are flush in the floor, the matter is simplified. All that is necessary in that case is to push the water to the opening, using due care to keep the dirt away. When the water is picked up

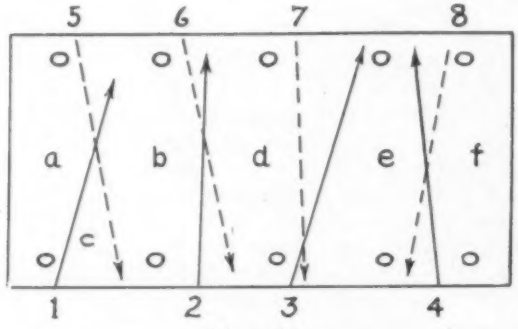



FIG. 11

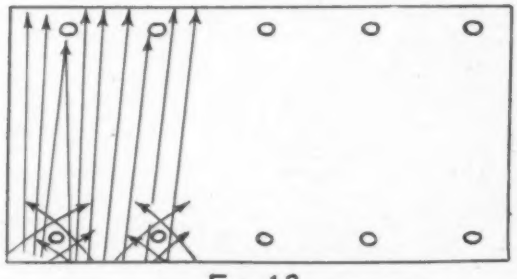


FIG. 12

in pails, some boy should be assigned the job of removing all waste, paper, wood, and so on, before he dumps the water into the sinks.

Speaking of dirt serves as a reminder that a thorough sweeping of alleys and unders should always precede the scrubbing process, and early enough so that the scrubbing is not delayed.

Occasionally one finds the boys dumping the dirty water in the toilets. This is a bad practice; for they usually take no pains to remove the waste and other hard matter. The result—a stuffed toilet. And goodness knows, it is bad enough when the sinks are blocked up! As the ounce of prevention for the latter trouble, hot water should be frequently applied to the sink set aside for the dumping of dirty water. It is very effective in dissolving the grease that is contained in the water picked up from the clean floor.

Pipes in outer alleys, running from floor to floor, form a fine harboring place for all kinds of dirt. Of the large variety of filth that one can dig away from there may be mentioned dried tobacco juice, and second hand chews—as the discarded quids are popularly termed. A liberal dose of water and the use of a knife or scraper will make a good showing here.

One of the hardest places to keep clean is that around the feet, or sampsons, of a machine. If the dirt is left caked here for any length of time, it will be necessary to use a scraper to remove it. The ordinary triangular floor scraper makes a good implement for this purpose. A chief source of the dirt around the sampsons is neglect in drying thoroughly when mopping, the wet floor—aided by careless sweeping of unders—soon collecting an accumulation of dirt. Once in a while, one meets with a dirty, sticky substance that neither brooms nor water can remove from the floor. In such a case, a knife may be used to scrape off the objectionable matter. When an oil spot has to be scrubbed, it is advisable to pour the hot water on the spot sveral minutes in advance of brooming, so that the water can penetrate the wood, thus bringing up the oil. And it may be advantageous to let the water soak into any floor which is very dirty or grease covered.

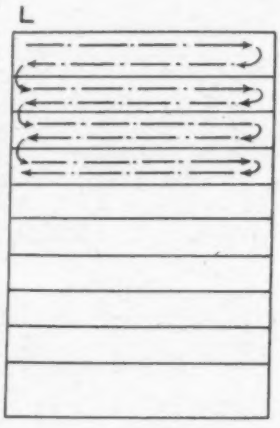



FIG. 13

Expert scrubbers will often prove too speedy for the moppers; or, again, it may be that for some reason, there are not sufficient moppers to keep up with the scrubbers. Should this happen, two of the scrubbers can be made to mop temporarily; for, otherwise, the wet floor, left to dry by evaporation, will show streaky places, on account of the irregular quantity of water on the more or less uneven floor.

On the other hand, one may wish to start the scrubbing with only two scrubbers, this number being sufficient to keep ahead of the moppers available at that time. Now just as soon as more moppers present themselves, an extra set of scrubbers should be added, or one will have the moppers waiting for the scrubbers. And waiting workers—if repetition be permissible—should be an unknown factor in scrubbing.

A little tact in handling the scrubbers will give valuable returns. For example, by permitting the scrubbers to have the time between completion of scrubbing and the finishing of mopping for themselves, they will work their heads off to get through early. As this time is usually about a half hour, it would appear reasonable to give it to them for their increased exertions. So anxious, with such a reward, are the lads to finish early that they may not give the scrubbing the necessary attention, and this makes it requisite to watch them closely.

How much soap paste, scouring powder, or other solvent, should be used? This depends a good deal on the management's supply policy which often limits the quantity one may use. The greater the amount, obviously, the cleaner the floor. A little experimentation will often help

to settle on the degree of cleanliness that can be adopted as a standard, and the quantity of cleaning material required can then be readily estimated.

In just the same way may be answered the query of how often the floor should be scrubbed. If a floor soils quickly, twice a week may be necessary. In such a case the unders may often be kept sufficiently clean with just one scrubbing. That is, unders once, alleys twice. If the floor is not very dirty, once a week may suffice for both alleys and unders. Different rooms require different treatment, and no set rule should stand in the way of the object sought—a clean floor.

Open spaces and main and outer passages should receive frequent cleanings, and above all, should have one on the last day worked each week. Nothing, perhaps, reacts so

FIG. 14

favorably on workers as a clean floor at starting time on Monday morning—blue Monday.

## Mopping.

Where the nature of the work is such that the windows can be kept open until the scrubbing is done, a great deal of assistance in the mopping, or drying process, is rendered by the natural atmospherie function of evaporation. Nature, long before man, had her own peculiar method of mopping water!

It may savor of superfluity to put forward the injunction that the underparts of the machinery be cleaned previous to the scrubbing—not after. Yet so frequently does one run into places where a freshly scrubbed floor is being messed up with dirty waste, blotches of black oil, and patches of grease-soaked rust-incrustation dug loose from the sampsons of the machines, that the solicitude may well be expressed.

One or two lads should be detailed to mop the unders; furthermore, these lads should be relieved by others after one-third, or one-half of the unders have been mopped, because this mopping of unders is a back-breaking job. As in all kinds of work, there is a right and a wrong way of mopping unders. Fig. 11 shows the area underneath a machine. The circles indicate the position of the sampsons. At 1, 2, 3, and 4, are the paths of a mop thrust underneath by the first mopper; while from the other side is shown by dotted lines at 5, 6, 7, and 8, the path of a mop

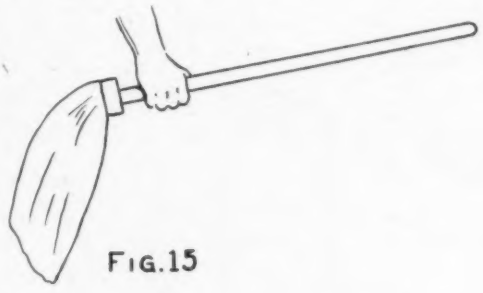


FIG. 15

pushed aimlessly here and there by the lad on that side, following the lead of the first mopper. A glance at the sketch instantly discloses that this method of mopping is dead wrong. For instance, the spaces at a, b, c, d, e, and f, are not touched at all; and, moreover, the sampsons are not taken care of properly. As already noted dirt accumulates only too rapidly around these sampsons.

The right way of mopping unders is given in Fig. 12. Here, to be easily comprehended, the mopping is shown from one side only, the arrows indicating the direction. Observe how closely the paths lie together! No chance of missing any spot. Look at the first two sampsons on the lower side. See how the mop is thrust in, not only straight by the sides, but at an angle so that the floor back of the feet can be dried. If clean, even-drying, non-streaky unders are desired, the procedure illustrated must be closely adhered to. The youngster on the opposite side mops in the same way, of course.

FIG. 16

In mopping the alleys, one always goes backward, moving the mop from side to side, the movements so closely together that the mop passes over every inch of the alley. Using Fig. 13 as a guide, one starts as at the left hand upper corner, (L), moving the mop along the first board to the left side, after which the mop is ready to slide to the second board. Speedy results are obtained by this method. A moment's experimentation will quickly convince anyone that it is far easier to move barkwards in mopping alleys than it is to go forward.

For a right-handed mopper the proper way of grasping the mop is to hold the upper part of the handle near the end with the right hand, the thumb clenching over the fingers and on the side nearest the body, and the back of the hand facing the side farthest from the body. The left hand grasps the mop handle about 18 or 24 inches from the filler. The back of this hand is uppermost and almost

flat while the thumb is on the bottom and pointing downward. The position is clearly shown in Fig. 14. Successful mopping—it cannot be too strongly emphasized—depends on the proper grasping of the mop.

Heed should be given to the way the moppers swing thtir mops; for it will be found on inspection that some have developed a pernicious habit of starting the mop with a snap, the filler-holder being raised a few inches from the floor, then slammed down sharply. This latter action causes the tail of the filler to snap like a snake's head does when a boy manipulates its tail. The action of the mop's tail causes dirty water, pieces of dirt, waste and other substances that have been gathered by the filler to fly out from the mop. The product of the machinery is frequently sprayed in this fashion, greatly to its detriment.

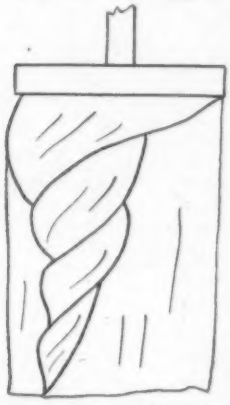


FIG. 17

A sharp eye must be kept on the moppers as a general rule, because some of the boys will lay down on the job; that is, shirk their work by dragging their mops in a straight line instead of swinging them left and right across the full width of the alleys.

The best moppers should be used to finish an alley. By finishing an alley is meant the final mopping before the alley is left to complete its drying through evaporation. Finishing mopping is considered an honor, for only the acknowledged best moppers are chosen for this work. It is the aim of the finishing mopper, therefore, to make good. Tandem finishers often produce quick results. This method of tandem finishing has the same effect that motor-pacing has in bicycle races—it brings forth greater exertions on the part of the mopper being paced. To have the tandem finishers take turns at pacing is a good stunt.

Learners at mopping, in their awkwardness frequently dislodge arms, or other extensions under the machinery. Alertness in inspecting these parts will often be the stitch in time that saves a deal of trouble.

The practice of cutting handles to a two-foot length, or so, should not be indulged in. No good can come of forcing the boys to maintain the cramped condition that they must assume when grasping the short handle. The expected extra rapid drying of the floor, to tell the truth, does not always materialize.

Carrying the mops on the shoulders should be discouraged. There is always more or less lateral motion to the filler of a mop so held, which may be sufficient to entangle the mop in running parts of the machinery. The holding of a mop with one hand in the manner indicated by Fig. 15, should also be prohibited. Too often is the loose end of the handle thrust into pulleys, and other running parts of the machinery, not only thereby causing disastrous breakdowns, but also laying the mopper himself open to injury. A good way of carrying a mop is shown in Fig. 16. As there noted, the mop, in an almost perpendicular position, is held by both hands, and rather close to the body. No danger of either filler or handle tip coming in contact with any running parts.

Workers not directly connected with the mopping or scrubbing should be requested to stay out of the alleys being at the moment scrubbed and mopped. For their own sakes as well as that of the floor; because in the first place, they are apt to slip and fall, and in the second place, the floor looks bad when marked up by shoes during the final drying period. Trucks also mar up a drying floor, and should be barred altogether when possible.

Rooms so fortunate as to boast a maple floor should never have an excuse for an untidy, greasy floor. No wood, perhaps, used in mill construction makes such a fine appearance after scrubbing as a maple floor. Hard pine looks good, too, having a deep rich, creamy color. It cannot, however, vie with the snowy look of the maple, and it seems to soil more readily than the latter.

### Wringing.

The person wringing should dip the wet mops into a pail of hot water so that the dirt and grease may be removed. Mops not so washed will, in time, get so loaded with dirt that any floor on which they are used will, after drying, look as though it were wearing its war-paint.

When mops are wrung by hand, it is quite a stunt to do the wringing rightly. The most effective way is to turn each half of the mop-filler in a spiral thus forcing out the water in a gradual but effective manner. Fig. 17 gives an idea of how the thing is done. Simply pressing with the hands (as is sometimes done), is practically useless. A strong lad should have the wringing job. As some boys are left-handed, they can turn the filler in the opposite direction. The direction is immaterial—the method, most important. If mechanical mopwringers can be provided, either attached to the sinks, or of the type that has to be used on the floor, the wringing problem is greatly simplified. Whatever the system of wringing used, the washing of the mops should never be neglected.

Protection from the water must be given the lad who does the wringing. Old bagging fills this requirement nicely, and can be used for an indefinite period, if it is dried and stored away after each scrubbing. Rubber aprons are not so irksome as heavy bagging, if one disregards the expense.

If the wringer cannot keep up with the mops that are brought in, assistance should be given him. Under no circumstances must the mopping be held up for lack of mops! If there are more wringers available, or more holders that can be used, at the sinks, extra boys can be put on to tide over the rush period. Quite often, just having one boy wash the mops and put them within reach of the wringer will suffice to keep the moppers supplied.

In the cleaning up that follows every scrubbing, scrupulous washing of pails should be attended to; the mops should be given a thorough rinsing in hot and cold water, and be well wrung out; furthermore they should be hung up individually at the mop-rack; and the brooms, too, should be hung up to dry. All these details, properly looked after, will make scrubbing a simple matter, and bring a clean floor—that thing of beauty—within reach of every mill.

---

Garland Manufacturing Co., Saco, Maine, manufacturers of loom pickers and loom harness, are sending out to their customers and friends an attractive bronze knife for desk use.

# Blending Wool and Cotton

BY JOSEPH H. BARKER.

The practice of blending wool with cotton is not limited to coarse long wool, shoddy, etc., or to the production of thick yarns. On the contrary, some of the thinnest and finest flannels and dress goods are made from a mixture of wool and cotton, and under proper treatment—when the quantity of cotton is not in excess—cloths possessing special serviceable properties of strength, durability, and unshrinkableness, and having quite the appearance of all wool goods are produced. A cloth of this character, almost indistinguishable from an all-wool cloth, has been manufactured for the last 40 years or more. Some of the secrets of its manufacture have never been divulged, and are yet supposed to be known to only one individual. Many attempts have been made to imitate it, but with only partial success. The general appearance of the cloth has been produced in some measure, but its special and peculiar properties have never been reproduced in any of the imitations.

In addition to blankets and rugs and other similar cloths of both the coarser and finer qualities, and the fine, thin, diaphanous flannels and other similar cloths, there are innumerable cloths in so many graduations of quality, thickness and other characteristics, that it would occupy too much space to enter into the details of manufacture of all of them. It may serve the purpose of the present article if one typical cloth of the thinner and finer quality be selected, such for instance as a flannel of the highest character and finest quality, of say, 2½ to 4 ounces to the yard.

The modifications which would be necessary in the manufacture of goods of an intermediate quality and thickness would present no difficulty to the practical manufacturer, and need not be entered into.

The manufacture of such a flannel as is suggested, necessitates very small spinning, and for such a purpose very fine, silky wool of the best merino quality is necessary. Meringo or shoddy could not possibly be used for the purpose. They do not possess the requisite spinning properties, and spinning in the true sense of the word is absolutely necessary in the production of yarns suitable for such a cloth.

The blend may be supposed to consist of one-third cotton and two-thirds of the finest wool—by preference of low milling property. The wool should be sound, and as regular as possible in quality and length of fiber. The most suitable length would be about 1½ inches.

The most appropriate cotton—the cotton which would give the nearest approach to "all wool" appearance and handle—is cotton with a curly or wavy fiber. Gossypium Peruvianum, for instance. Some American cottons possess this characteristic in some degree, but rough Peruvian cotton gives the best results, and approaches more nearly in length to the length of the wool fiber, which is an important consideration in the production of even yarns.

The preparation of such a blend has already been described in a previous article. The wool and the cotton should each be prepared separately. The cotton should be scutched, and carded on a cotton card, and reduced to a perfectly free and fleecy condition before being blended with the wool. It should not be roped or formed into a sliver as it leaves the fly-comb, but should be received in a suitable receptacle—a box, for instance—as it falls from the comb. In that way its light and fleecy condition is preserved—and it is in a condition all the more suitable for being blended with the wool.

The wool should be scoured perfectly clean, and be willeyed, mixed, and oiled before being blended with the cotton, and it would be all the better for being allowed to stand some hours "in oil," after being teazed. These are important points which cannot be too much insisted upon.

If the two be blended together before the wool has had time to absorb—to assimilate as it were—the oil, the cotton will absorb the free oil (which it does not require) and thus deprive the wool of some of the oil which is necessary for its successful scribbling.

These preliminary matters being accomplished, the next point for consideration is, which is the most suitable class of machinery for scribbling such a blend, and it is needless to say that the machinery described in a former article as being most suitable for scribbling coarse wool, shoddy and meringo for the manufacture of blankets and other thick and coarse goods, is absolutely unfitted for such a blend as we are now considering.

The primary requisites in flannel yarns are that they shall be sound, even in thickness, soft, and woolly. The successful attainment of these conditions depends largely upon the kind of scribblers, carders, feeders, and condensers which are used, and the number and extent of the drawings in the spinning process.

The card clothing is also an important factor in scribbling a blend of this description. For such material, fine counts, and the best quality of cards only, should be used.

The oil to be used in oiling the wool should be fine, limpid and pure. The finest quality of olive oil has been found to be the most suitable. The more viscous oils, oleines, and recovered oils, are quite unfit for the purpose, and appreciably limit the extent to which the spinning can be carried.

In order to produce the soft plushy yarns which alone are suitable for such goods, spinning by the spindle must take a prominent place in the operations. It is a mistake to suppose that such small yarns as are required can be produced of the requisite degree of wooliness by condensing small, and by giving one drawing only on the mule. It is true that a small strong yarn can be produced in that way, but it will be hard, bare, and boney, and not by any means the proper kind of yarn for flannels.

The yarns for some of the thicker flannels would measure 30 to 40 yards to the dram; and for some of the finest and thinnest flannels they are required to measure 60, 70, 80, or 90 yards to the dram. From a blend of wool and cotton such as we are considering, it would be quite feasible to produce a 35s yarn in one drawing, by condensing, say, to 20 yards to the dram, but the thread would be hard and bare, and be too much like a worsted thread. If the blend consisted of pure wool only, it would be sufficient to condense to 15 or 16, and a good thread would be formed, but it would be relatively hard and bare, and not an ideal

thread for flannels. Whether the blend be a mixture of wool and cotton or be all wool, the ideal flannel thread can only be formed by two or more drawings by the spindle.

When it is required to produce a thread of 60, 80, or 90 yards to the dram, the necessity for two or more drawings is all the more apparent, apart from the question of producing a woolly thread.

An impression prevails that a stronger thread is produced by condensing small, and giving one drawing only on the mule, and such may be the case if the material be very short in the fiber and be second-hand material, such as shoddy, meringo, or pulled waste, but it is not in accordance with facts, when applied to the spinning of such a blend as the one under consideration. From such a blend, a thread quite as strong, and much more regular in thickness, and furthermore, of the requisite woolly character, is produced by two or more drawings. This statement is not only in accordance with the theory of woolen thread production, but is confirmed by practical experience in spinning such yarns.

The consideration of suitable machinery for dealing with this class of work now claims attention, and firstly, long, broad machines with many parts are not suitable for scribbling this class of material.

There should be two scribblers, the breaker and the intermediate or clearer, and the carding engine. The breaker may consist of a breast, forty inches in diameter, and one or two swifts of 50/52 inches diameter. The clearer should consist of a breast and one swift only, both of the same diameters as those in the breaker. There should be no breast doffer in either machine, the object being to dispense with the use of fancies as far as possible, fancies being almost invariably productive of irregularity in the machine. Two workers on the breast and four or five on the swift would be suitable.

There would be no serious objection to the use of a hopper feed for the breaker, but hand feeding is preferable when the load of wool is light.

The clearer and the carder should be fed with Scotch feeders, the soft flat sliver being specially suitable for this kind of work. The width of the two scribblers should be 60 inches; but 42 or 48 would be more suitable for the carding engine. On the narrower machines there is less liability for the wool to concentrate in the center of the machine, and the condenser slivers are produced more regular in thickness, which is all important in the production of small yarns.

The carding engine should consist of a breast and one swift only and—except in the width—should be in other respects the counterpart of the clearer.

Some manufacturers omit the breast in both the clearer and the carding engine, but there are objections to that arrangement, as it serves to put a great strain on the wire of the swifts, and it is much better for the swift to receive its wool from the angle stripper of the breast, in which case the wool is much more evenly distributed upon the surface of the swift. Another important consideration is that the life of the cards is much longer under such conditions.

Traversing Workers. Two of the workers on the swift of the carding engine should be made to traverse, and be so arranged that they traverse simultaneously in opposite directions. This arrangement serves to level the wool upon the swift and the doffer of the condenser, and to insure the production of slivers of equal thickness and consistency. The traversed workers are all the more effectual if they are made to traverse many times during each revolution of the worker. To have them traverse to and fro once only for each revolution is not of much service, as they then deliver a considerable proportion of the wool which they carry round, to almost the same position on the surface of the swift as that from which they receive it, and under such conditions but little crossing takes place.

The condenser should be either of the ring-doffer single stripper, or of the Martin (tape) type. The latter has, to a large extent, superseded the other kind. Its advantages are manifest. In the case of the ring-doffer condenser of the ordinary type, even when the spaces between the rings are filled up with leather or gutta-percha, there are accumulations to some extent, of fluff or fly in the spaces, and these accumulations are from time to time carried away in patches which attach themselves to the slivers and make lumpy places of waste material in the sliver, and are productive of lumpy yarns.

Another disadvantage of the ring-doffer condenser is that ridges of wool are left on the surface of the swift. The ridges are always in alignment with the spaces on the doffer and that portion of the surface of the swift upon which the ridges are formed becomes choked with wool and is prevented from doing its work properly. If, however, the card rings be mounted eccentrically, with a traverse of even a quarter of an inch only, and the doffer be traversed bodily also, the wool ridges cannot form on the swift, and the difficulty is thus obviated.

If the Martin condenser be used, this condition cannot arise. The whole of the surface of the doffer is covered with card, there are no spaces in which fly or waste can accumulate, and for the same reason every portion of the surface of the swift is perfectly cleared and wool ridges cannot form.

Another advantage in connection with the tape condenser is, that a fly comb can be used for stripping the doffer. This may at first sight appear to be unimportant, but that is far from being the case. It is very important in the production of flannel yarns, or any yarns which are required to be plushy on the surface. The action of the comb disarranges the longitudinal disposition of the filaments, and is productive of a light, fleecy, and curly film or sheet of wool as it leaves the doffer, and materially assists in producing the desired kind of soft plushy yarn in the spinning process.

There can be little doubt indeed that the tape condenser is the most suitable one for the production of flannel yarns, and for general purposes for the treatment of blends of a medium and fairly uniform length of fiber. By it it is possible to obtain a greater number of slivers from any given width of machine than by any other type of condenser. Not that dividing the film from the doffer into the greatest possible number of slivers, is always a wise thing to do—but that it can be done serves to indicate the capabilities of the machine. It is not, however, the best machine for either very long or for very short and tender material.

Some manufacturers have taken advantage of this feature of the tape condenser, to take off so many slivers, and condense so small as almost to dispense with spinning. To such an extent has this been carried, that in some cases all that remained to be done to produce a thread of the desired thickness was to slightly stretch and twist the sliver, and form it into a cop or bobbin as the case may be.

This practice has contributed more than almost anything

else to the deterioration of the true flannel thread, and has resulted—probably in some cases by intention—in the production of a thread which is hard, bare, and stubborn, with an approach to the appearance of a worsted thread, but without any of its advantages.

Apropos of narrow carding engines, consisting of a breast and one swift only—and having regard to the kind of work for which such machines are used, the narrowness is compensated for by the higher speed at which they are run, and that without risk or liability of the wool gathering in the middle of the machine. As the wool passes through a machine of that construction—with only one fancy and one doffer, there is neither time nor opportunity for the law of centripetal force to operate, and for the wool to so concentrate, and consequently slivers regular in thickness and consistency are formed, and the weight of the material which can be turned out per hour is approximately the same as that from a wider machine running at a slower speed.

The swift of such a machine may quite conveniently be run at from 80 to 100 revolutions per minute, according to varying circumstances, and different kinds of work; and the doffer would, of course, be run at a proportionately corresponding speed. The speeds would properly be adjusted according to the judgment and experience of the carding overseer, and with regard to the kind of material which might be under treatment, and the thickness of the slivers to be produced.

From such a machine and under such conditions—combined with two or more drawings on the mule—something approaching a perfect flannel thread could unquestionably be produced.

## Lancashire Cotton Industry and its Foreign Trade.

The British government trade returns for September contain interesting statistics relating to the cotton industry. In the following table particulars are given of the exports of cotton cloths during the nine months ended September 30th, and the corresponding period in 1919 and 1913.

| | Yards. | Pounds Sterling |
|---|---|---|
| 1913 | 5,250,278,900 | 73,659,119 |
| 1919 | 2,363,026,400 | 120,454,656 |
| 1920 | 3,540,677,100 (sq. yds.) | 242,732,477 |

So far this year exports are larger to Bengal, Bombay, China, Egypt, Dutch East Indies, the United States, and the Straits Settlements, but shipments are decreasing to France, Denmark, Belgium, Switzerland, Germany, and the Netherlands.

In the second table particulars are given of the foreign trade in yarn for the nine months ended September, with the comparative figures for 1919 and 1913.

| | Weight Pounds. | Pounds Sterling. |
|---|---|---|
| 1913 | 154,761,700 | 11,022,055 |
| 1919 | 120,017,700 | 24,449,748 |
| 1920 | 118,447,700 | 37,656,977 |

Compared with last year shipments are increasing to Bombay, the United States, the Netherlands, Germany, Bengal, and China, but there is a falling off in the takings of France, Switzerland, Denmark and Norway.

## First Institute for Industrial Nurses.

An Institute for Industrial Nurses, the first of its kind, was held this fall at the New Haven (Conn.) School for Public Health Nursing. Fifty-four registered public health nurses from eight states attended. The varied industries represented and the discussions of the nurses brought out very clearly the fact that, while no fixed rules can be worked out to fit all places, it is possible to state definitely the fundamental principles of industrial nursing.

There were representatives from a university mercantile department, a state department of health, visiting nurse associations; canning, packing, chocolate and soap industries; woolen and cotton mills; brass and iron foundries; wire and paper mills; manufacturers of leather and rubber goods; monument, typewriter and corset works; roller bearings, sporting goods, tools and electrical appliances; printing and oil plants. The states represented were Connecticut, Massachusetts, New York, Rhode Island, New Jersey, New Hampshire, Illinois, Michigan.

The program lasted ten days and included lectures and round tables on Public Health Nursing, Industrial Nursing, Industrial Hygiene, Industrial Diseases, Records, Ethics of Industrial Nursing and Medicine, Industrial Relations, Social Problems, Industrial Psychology, Nutrition, Health Education, as well as Excursions to Manufacturing plants. Four periods were given over to lectures on Recreation and other methods for counteracting industrial monotony. Play demonstrations were given and every one joined in folk dancing and simple games.

Most of the nurses wished for a larger Institute with more round tables and excursions. Others suggested a shorter period because it would be easier to be relieved of their duties for one week. The desire for an Institute next year was unanimous.

The interest of employers was shown by the fact that many nurses attended at the expense of their firms.

A Norden & Co., Cotton Exchange Building, New York City, have issued the 1920 edition of "A Quarter Century of Cotton," a chart which is sent out annually by this company. This year's chart shows, in graph, the varied course which the price of middling upland cotton has taken during the last two and a half decades, from 1895 up to the present time. It also gives other interesting information including the visible supply of American cotton at the end of each season during the last 25 years, the bureau condition reports, cotton ginned, world's cotton consumption and foreign statistics.

Morse Chain Company, Ithaca, N. Y., manufacturers of the Morse "rocker-joint" silent chain, has established a Detroit branch factory which will be devoted exclusively to the manufacture of silent chain sprockets and the Morse adjustment. The company will continue to manufacture chains and power transmission at the main plant at Ithaca. The Detroit branch will be under the general management of F. C. Thompson, with F. M. Hawley as chief engineer and C. B. Mitchell as factory manager. Construction work at the Ithaca plant includes two new large concrete buildings making a considerable addition to the seven acres of floor space already occupied by the company.

# Finishing Drills for Shoe Linings

BY WILLIAM B. NANSON.

The finishing of goods for shoe linings varies according to the quality of the cloth and the style of shoe it is to be used upon, and runs all the way from a stiff pure finish for the good grades to the heavily filled styles for the lower, lighter and cheaper grades.

The former class may be starched on both sides, i. e., run over an immersion roll in the starch mixture and squeezed between mangle rolls to remove the superfluous starch, while the latter must be starched on the back so as not to cover up the twill on the face side. In this latter case the starching must be effected on either a Scotch mangle, a Tommy Dodd mangle or a back filling machine. Probably the best sizing material for shoe drills is a soluble starch as most of these goods are starched in the grey and penetration is difficult. When this material is made in or put into boiling water it does not thicken up into a thick paste, as starch usually does, but dissolves completely. This solution thickens on cooling, but is ready for use when heated again. While it is being used hot it is a very thin liquid and the fabric easily absorbs it, and it penetrates to an extent quite impossible with an ordinary starch jelly. Starching with a soluble starch is, therefore, not only fuller, i. e., fills the goods better owing to its superior penetration, but a much more even result is obtained. If the goods are printed or dyed, as is sometimes the case with certain styles of shoe drills it does not affect the colors in any way as starch does, as a matter of fact, it improves them and tends to enliven them and make them brighter. Soluble starch is a commercial product and may be purchased ready-made, but it can be made by the finisher himself in a variety of ways and the best method is by the use of diastafor which is as follows:

A homogeneous starch paste is first made by mixing the starch with cold water and then boiling with constant stirring in the usual way. This is then cooled down to 150 degrees F., permissively by adding cold water while stirring. After cooling, about two to three per cent of diastafor, which must previously have been dissolved in lukewarm water, is added to the cooled down starch. The action of the diastafor must be discontinued as soon as the starch paste liquifies. This will take about half an hour. During this period it is necessary to constantly agitate the mix so that the solubility may be uniform throughout. By raising the temperature to 180 degrees F. or by adding a little soda to the mixture the action of the diastafor can be immediately stopped. To save time, when making large quantities of size, it is admissible to turn on the live steam into the mixture as soon as the diastafor has been stirred in. If there are other ingredients to be added to the mixture, such as softening or filling material—Turkey red oil, Epsom salts, china clay, glucose, etc.—they must be added at this stage and well stirred in and dissolved or mixed and when the whole mixture is thoroughly homogeneous and smooth it may be thinned down with water to the desired strength. All the ingredients added in this way are held firmly by the starch and will not rub off nor dust off owing to the peculiar adhesiveness of dressings made from soluble starch. Diastafor is a preparation of malt and derives its value from its high diastatic power. It is far superior for the conversion of starch into the soluble form to any other chemical or mechanical method known. It has no action on vegetable fibers and does not affect colors. Being completely soluble in lukewarm water it is always ready for use and therefore represents economy of time and labor, and reliable and satisfactory results.

Diastafor should always be used where supple and closely adherent results are required, it changes the starch by its diastatic action into soluble starch, dextrine and maltose. The addition of various salts, fats, clays and other ingredients may be made in any proportion and the results are distinguished by the evenness with which the size penetrates the fiber and the full, pliable handle given to the goods. It does not dust off, harden, nor contract by exposure and for some classes of shoe linings it is peculiarly advantageous.

I might say here that a commercial soluble starch, if purchased as such, when made into a cream with cold water and then poured into boiling water, should completely dissolve and should not set when cooled. If it forms a jelly it indicates the presence of unconverted starch. It is, in my opinion, better for the finisher to make his own as described, although there will probably always be a little, more or less, of unconverted starch in the home-made article but it will do no harm.

If a stiffer finish is wanted I might say that if ordinary starch is boiled with water containing one and one-half per cent of caustic soda, a paste is formed which is thicker and far more adhesive than if the starch were boiled in water alone, moreover, it increases its binding power or ability to hold, without dusting off, larger proportions of clay and other fillers. Also the alkali present prevents, to a large extent, the development of mildew by neutralizing any acid formations in the starch. This method of sizing, by using caustic soda, produces a much stiffer finish than where diastafor or ordinary starch is used and is useful in starching shoe linings where extreme stiffness is required.

Glucose is often used in starching shoe linings. It makes the goods feel fuller by modifying the stiffness of the starch and it also adds very materially to the weight of the fabric. It is generally prepared by boiling starch with a dilute acid; in this case dextrin is formed as an intermediate product, which becomes further hydrolized into glucose. Sulphuric acid is used and after inversion the excess is neutralized with chalk, the calcium sulphate formed is filtered off and the solution concentrated until it crystallizes. Dextrin is always present in variable proportions. Starch glucose occurs in commerce in several forms, varying from conditions of pure anhydrous dextrose through inferior kinds of solid sugar to the condition of a thick, syrupy liquid resembling glycerin, which contains a large proportion of dextrin. The term glucose is restricted to the syrupy preparations, the solid products being distinguished as grape sugar.

Glucose in the confectioner's crystal form has been used by finishers in England for many years as a weighter on high grade shirtings, in which visible mineral fillers or

weighters are inadmissible. It gives a peculiar thick, as well as a soft feel, if used in the right proportions, and it can be used to great advantage on some grades of shoe linings.

As a weighting agent, glucose, for a so-called pure finish, is unsurpassed for giving excessive weight. Goods such as heavy drills which lose 15 to 25 per cent of their weight in bleaching can be successfully finished up to their grey weight by using glucose and without the aid of any kind of mineral fillers or weighters. The finish is called an absolutely pure finish.

Glucose can be used along with all other finishing materials but it very readily ferments and is liable to induce mildew if precautions are not taken to prevent it. The addition of about one-fifth of a fluid ounce of liquid carbolic acid for every thirty pounds of glucose used will prevent mildew from taking place. Glucose and sugar added to any description of starch paste adds very materially to its adhesiveness.

Soap forms the basis of most of the so-called softeners, though it goes by many a weird trade name to enhance the price to the uninitiated.

The substances supplied to finishers under the name of softeners, finishing pastes, etc., are really diluted soaps made by boiling some regular soap in water until it is dissolved, and then allowing it to cool. These softenings vary considerably in color and consistency. Some are quite white and can be used for the finest finishes, others are more or less tinted and can only be used for colored goods.

The best white softenings are made from cocoanut oil or good white tallow, the former being preferable. Such softenings are used with starch when the cloth must have an appearance of fullness, and yet remain pliable and soft to the touch. This style of softener may be profitably used in the finish of fine bleached drill or sateen finished shoe linings. A good soap softening made from cocoanut oil by the cold process and retaining the glycerin and a little fat is a most excellent softening to go with a heavy clay and starch filling which we shall put (as shall be shown later) into our back filled shoe linings.

The oils and fats most suited for the manufacture of soaps or finishing pastes by the cold process are those belonging to the cocoanut oil group and castor oil, as they possess the property of being converted into soaps on being stirred together with cold concentrated caustic soda solutions of approximately the specific gravity of 1.35. The plant required for this manufacture is of the simplest construction, and merely consists of an iron or wooden frame into which the fat, previously brought to a temperature of about 35 degrees, is placed; the fat is then stirred, while an accurately measured quantity of caustic soda of specific gravity 1.35 is run in. The frame is covered and allowed to stand, when the mass develops some heat, sufficient to complete the process of saponification within 24 hours.

Soaps thus prepared naturally contain the whole amount of glycerol that results from the saponification of the oils and fats. The theoretical composition of a soap made from cocoanut oil having a saponification value of say 240 by the cold process follows:

| | |
|---|---|
| Combined sodium oxide $Na_2O$.... | 8.86 per cent |
| Fatty anhydrides ..... | 54.50 per cent |
| Glycerol, water and small quantities of inorganic salts (by difference) ..... | 36.64 per cent |
| | 100.00 per cent |

By incorporating with the cocoanut oil certain proportions of olive oil, lard, tallow, etc., these oils and fats can also be saponified in the cold and a wide range of finishing pastes made.

For finishing shoe drills, soap softenings or finishing pastes can only be used with starch, glucose, china clay or a mineral filler. They cannot be used with metallic salts such as the chlorides of the metals, zinc, magnesium, Epsom salts, etc., since these bring about a double decomposition resulting in the formation of curdy masses of insoluble metallic soaps which will adhere to and spot the goods.

A finishing softener known as soluble oil is to be found upon the market in two distinct products. One of these is a simple solution of a castor oil soap made by the cold process just described.

Castor oil differs from any other oils in soap making properties. It gives softer and more transparent results than any other fat, and which are more easily soluble in water, the solution having a clearer appearance, and while the finishing results are very much the same as those of the other soap softeners described, it gives a much softer and fuller feel to the cloth. Like all other true soaps, however, it possesses the disadvantage of being comparatively useless in the presence of lime compounds and metallic salts.

The other form of soluble oil is more expensive and is known as Turkey red oil. In this case the saponification of the castor oil is brought about by the action of sulphuric acid on castor oil. The acid is gradually added to the oil with constant stirring, the temperature being kept down to below 35 degrees C. The exact chemical changes that occur do not seem to be known with any degree of certainty, but it is generally conceded that the resulting compound consists of three substances, unaltered oil, sulpho-recinoleic acid, and oxrecinoleic acid. Recino-sulphuric acid is soluble in water and its aqueous solution gives a lather in the same way as a soap solution. One important property of Turkey red oil is that it can dissolve calcium salts and does not, therefore, give a precipitate with hard water like ordinary soaps. If it has been produced from pure castor oil no precipitate will be formed when a solution of it in hard water is made alkaline with ammonia. Turkey red oil is a great capillarizing agent and this makes it distinctly valuable for the sizing of shoe linings especially those made from unbleached drill.

Some makes of Turkey red oil are either distinctly acid or alkaline. They form a milky emulsion with water; they can, of course, be used, but a neutral oil giving a clear transparent solution is much to be preferred in this work.

A perfectly neutral Turkey red oil is a good thing to use in the finishing of shoe drills. It softens the harshness and stiffness due to starch or Glauber salts and makes the cloth feel fuller. When used by itself it imparts a full and mellow feel to the cloth without making it feel greasy, which finish and feel are permanent, and, moreover, goods so finished are not so likely to mildew.

Lard oil and cocoa butter are about the best *real fats* to use as softeners because they, unlike tallow and some proprietary softening mixtures and soaps, do not turn

rancid after being applied to the goods.

## Preparation of the Finishing Mixture.

There is considerable divergence of practice for devising the most favorable proportions and constitution of a mixing to meet special requirements. The basis of nearly all mixings is some kind of an adhesive to act either alone or as a binder for weighting materials having no adhesiveness in themselves and it is evident that much of the success of the finished product depends upon the care with which the mixing is made. Every ingredient should be thoroughly mixed with all the other ingredients.

Accessories appertaining to a starching department are a mill for grinding and boiling china clay and other mineral filling material and sieves with a fine copper mesh. The mill consists of a large tub fitted with a rotating agitator and a steam pipe for boiling the contents. The clay should be always boiled and agitated until the lumps are all broken up and the mass is smooth and homogeneous. It should then be run from a valve at the bottom of the tub through a sieve into the stock tub. A short calculation will then tell the operative how many pounds of dry clay there is in each gallon of the mixture and he can arrange his starch mixings accordingly.

If the plant is a large one and the daily output of the goods to be starched and filled with clay is of a great and

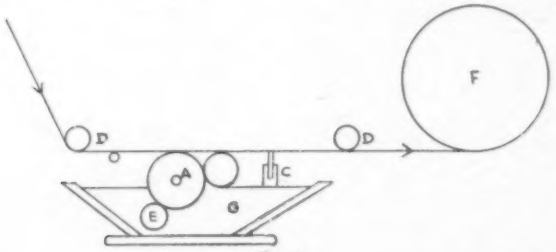


FIG. 1

steady volume it is always advisable to mix and boil the starch in a dough mixer as is used by the National Biscuit Company in their factories. It needs no attention to speak of. The various materials are put into it with the necessary water, the worm is started and the steam turned on and when the boiling is completed the cover is opened and the size run out into a tub or bin ready for use in the starch mangle or filling machine.

I might say here that all sizes containing clay as a filling material run better, i. e., fill better and run smoother when comparatively cold than when hot, while all starches, simply intended for stiffening, work to better advantage when hot. Further—and this is important—all clay mixtures intended for back filling low goods should first be boiled as strong and as thick as possible and then thinned down to a proper consistency. Clay size when used just as it boiled is too gelatinous and will not attach itself to the quickly passing cloth.

When finishing filled shoe drills the starcher had better confine his activities to one good heavy standard mixing and after boiling it, thin it down with cold water to the proper consistency for the various grades of goods he has to fill. In case of very low, open goods it pays to run them twice in a thin size about as thick as the average whitewash, rather than attempt to fill them at one run with a heavier mixing.

Most finishing plants, however, instead of using a dough mixer, will use a mixing tub of about 50 to 100 gallons capacity. This should be lined with copper at the bottom and around the rim to receive the wear and tear of stirring. The tub should be provided with a copper steam pipe of at least one and one-half inches in diameter, so as to boil and agitate the starch mixture briskly. Sufficient water is run in to fill the tub, together with the water of condensation, along with the boiled and finished mixture. The starch is entered first and the other ingredients afterward; the heavier clay fillers last. After the starch has begun to thicken constant stirring is essential. The soluble ingredients of the mixture go into solution but the insoluble only remain in suspension, and a very thorough mixing is therefore necessary to insure the production of a perfectly homogeneous mixture. The steam is turned on full for a short time to insure a thorough gelatinization of the mixture, the tub being covered to prevent splashing over. If the starch is too thick a continued boiling will thin it down to the proper consistency.

The mixing cannot be stirred too much during the boiling of it and a mechanical agitator does this the best always providing that it is built strong enough to stir the thick mixture.

For the back filling of shoe drill we shall use a machine similar to the one shown in Fig. 1. This machine is called a back filling machine and should be attached to an ordinary cylinder drying machine in such a manner that the face, or unsized side of the cloth, only is brought into contact with the first six or eight drying cylinders. Unless this be done the starch will stick to the drying cylinders as long as it remains wet and coming off in flakes will attach itself to the still damp goods as they pass over, and make spotty and dirty work.

The starch box G being filled two-thirds full with the size and the machine and dryer being started, the cloth passes in the direction of the dotted line and the arrows. The roller A carries a film of starch the thickness of which is regulated by the press roll B, which can be adjusted closer or farther from the roll A. The cloth after passing in contact with the two rolls A and B is drawn tightly over the metal "doctor" blade C. This spreads the filling and starching mixture over the surface of the cloth and scrapes the superfluous size off. An agitator E is placed in the starch box to prevent the heavy clay filling from settling. D, D, are rollers which may be adjusted as to height to give more or less contact of the cloth with the rolls A and B so as to give more or less size to the cloth. The small rod shown under the cloth between D and A is to lift the cloth, when advisable, entirely free from A and B. It is attached to the moving parts of D, D, and raises and lowers itself with them.

Probably the best mixing as a filler for all classes of shoe drills which require filling is made from 90 pounds china clay, 50 pounds corn starch, 5 pounds soluble oil or soap, 45 gallons water. This mixing will fill a 4.50 yard shoe drill and make it finish 2.65.

This mixing can be thinned down after boiling to any consistency thinner than this to suit any weight goods. For goods that are of a good quality, Epsom salts alone may be used to give weight and feel. It must be remembered, however, that no kind of soapy softening can be used with Epsom salts, they alone, however, will give a good deal of firmness and weight and the finish is perma-

nent and the goods will not mildew. A nice, full, mellow finish can be gotten on a fairly high grade shoe lining by sizing it with Epsom salts at 40 degrees Tw. and one per cent of chloride of zinc and drying the goods as cool as possible.

The following is a good size for shoe linings and will prevent fraying in the cutting room afterward. Make 25 pounds corn starch into a paste in the usual way by boiling in 45 gallons of water, cool down to 150 degrees F. and add two pounds of diastafor previously dissolved in lukewarm water. As soon as the starch has liquified add five pounds soluble oil and 50 pounds Glauber salt and boil the whole up again. Or, 55 pounds corn starch are boiled in 30 gallons of water, cool and add two pounds diastafor as before. When the paste has liquified raise it quickly to a boil and add 30 pounds of glucose and 5 pounds of neutral soluble oil or finishing paste. Another, where stiffness and weight alone is desired: 40 pounds corn starch, 30 pounds Glauber salt, 30 pounds glucose, 50 gallons water.

The last four recipes are applied boiling hot to the goods on a two or three bowled starch mangle where the goods are run through immersion rollers overhead in the starch and squeezed out by the mangle bowls.

# The Practical Technic of Mule-Spinning

BY ARTHUR L. BURTON.

(ALL RIGHTS RESERVED BY THE AUTHOR.)

It will be the purpose of the writer of these articles to give, in a simple illustrative manner, practical hints on carding, spinning and finishing, accumulated from years of practical experience and training. Because of the technical nature of some parts of mule-spinning it is my intention to treat this matter first, not in a general sense, such as drafting, twisting, etc., but in the specialized sense, such as building a cop. Information on this phase of mule-spinning is lacking in America, mule overseers generally having to acquire this information over long extended periods of experience. There are many overseers of mule spinning in America who are very clever mechanics as far as the mule is concerned, but it is a fact, nevertheless, and one which they will admit themselves, that what they know about their business is not what they learned out of a book, but that which has come to them as a result of years of experience, study and thought.

Therefore, notwithstanding the fact that mule-spinning generally has been on the wane in America for some years, being replaced wherever possible with the ring frame, there are enough mules still in use on hosiery yarns, in fine goods mills, etc., to make a series of articles of a technical nature on copping timely and useful. One of the many reasons why I am treating this phase first is that those interested may retain their interest enough to cut these articles out of the magazine and paste them in their memoranda or text books, for future use and guidance, thus getting an immediate insight into what ordinarily might take years to fathom out by experience and experiment. Oftentimes large sums of money may be saved to a mill by an overseer knowing just what is the matter with some of his mules, which may be making faulty cops that are outwardly correct, but nevertheless making waste to a greater degree than other mules in the same room.

Most any mill man will agree with me in saying that out of a number of mules in his mill, his weavers know which are the best weaving cops, and will look for the tickets, ready to grab the box as soon as it is sighted, or it may be the winder, if a hosiery or underwear mill, which does identically the same thing the moments he sights the box with the mystic mule number marked on it.

There is no reason why a number of mules in a room, if all are alike, should not give equal satisfaction, but it is a fact that they do not in some mills. I have heard some overseers say "Oh, that's a hoodoo mule, I have to be careful what kind of work I spin on it. I have to favor it."

This article is not to deal with the human element, the mule-spinner, which is a vital matter and will be treated later, but will specialize on copping, so that the readers interested will have time to digest the matter while waiting for succeeding articles which will deal in a general way with the processes named. There have been hundreds of books printed, some excellent and some not so good, on carding, spinning and finishing, and some are original and some are not. It is hoped, however, to be able to give enough original hints about these processes to make the time spent in reading them well worth while.

It will be assumed, in these articles on copping, that the readers interested are acquainted with the names of the parts connected with the copping mechanism, and for this reason I will mention the names of parts as I come to them without explaining what they are or where they are. As for the most part it will be overseers, second hands and some superintendents who will be interested, and who are more or less familiar with the copping mechanism, explanations of names of parts would seem unnecessary.

## Copping.

The yarn is guided on the mule spindles by the faller wires governed by the sector finger and boot leg or locking lever which rides on a block supported by a steel bowl or roll, which runs on the copping rail. The contour, or profile, of the copping rail is such as to impart the peculiar movement to the faller wires winding the yarn on the spindle. The copping rail rests on and is supported by the copping plates, back and front. These copping plates are of such a contour, or profile, as to give the cop the necessary shape and diameter, governing the fall of the rail down the copping plate inclines as the cop fills up ready to doff.

As the spindles taper in diameter it will be seen that some compensating mechanism is necessary in order to wind the yarn on the spindle and cop at a speed conforming correctly to the diameter of the cop and spindle. Such a mechanism is the quadrant, one of the most wonderful inventions ever devised on the mule, and a motion having a tremendously important bearing on copping.

The rail stabilizer, sometimes known as the pig's foot or rail slide, guides the rail in its fall without interfering

with its peculiar movement, and as it has an inclined face down which the rail slides on its supporting studs, the pig's foot retards the perpendicular fall of the rail somewhat, thus obviating the necessity of having such large builder wheels.

The loose incline, hinged on a stud through the copping rail at the shoulder of the rail, rests on the inner shoe or locking plate set-screwed to the front copping plate, and guides the faller wires from nose to shoulder of cop on what are known as the crossing spirals, shown by the dotted lines in Fig. 1. These crossing threads strengthen and solidify the cop. The necessity for the inner plate or

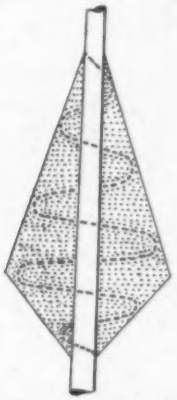


FIG. 1. CROSSING SPIRALS TO STRENGTHEN THE COP.

locking plate will be apparent, after consideration of its required function later. Formerly, copping rails were all in one piece, and there was no method of altering the degree of depth of locking the faller down the cop nose, unless by filing and chipping the front of the rail, the trouble with this method being the fact that what was taken off the rail could never be put back.

The carriage slips, or slides, at each side of the headstock square, have a very important function to perform, it being evident that any rising or falling motion of the carriage at the headstock, other than that deputized to the action of the rail itself, influences the shape of the cop and either improves or detracts from the quality of the build.

In treating of the slides in the headstock frames for the copping plates to slide in, the word copping plate beds will be used.

In treating of the faller wires the word copping faller

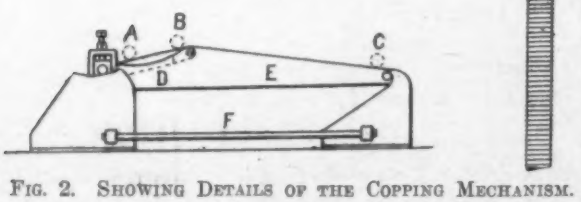



FIG. 2. SHOWING DETAILS OF THE COPPING MECHANISM.

A. Shows the position of the bowl or roll on the loose incline at the commencement of the inward run.
B. Shows the position of the same roll on the rail shoulder during the inward run.
C. Shows the position of the roll on the rail nose at the completion of the inward run.
D. The loose incline.
E. The Copping Rail.
F. The Adjustment Rods of the Copping Plates.
At the right is shown the position of the yarn on the spindle at the end of the first draw.

will mean the faller wire which follows the cop in winding, and the counter faller wire will mean the faller wire carrying the weights—the upper wire.

Upon starting up a mule after doffing it will be noticed that the front studs of the copping rail rest on a curved portion of the front copping plate, and the back studs of the copping rail rest on a curved portion of the back copping plate. (See Fig. 2.) It will be noticed that these plates differ in shape, especially as to the curved portions. These curved portions of the plates form the cop bottoms, and govern the diameter of the cop, as the shoulder of the cop is reached. It will be noticed that the curve on the back plate is greater than the front plate.

Now follow the explanation of the rail movement closely. The builder ratchet wheel turns one tooth (or more as may be necessary) and the plates move backwards ever so slightly, being both connected together with a long rod with locknuts on it.

It will be seen that the back part of the rail falls more than the front part because of the greater curve. What happens? The yarn chase, which we will say is an inch long, the first draw of the mule is slightly longer with each draw (at the nose principally) consequently we have a continuous winding of yarn at each successive draw, but slightly higher at the bottom, nevertheless getting higher at the nose as the rail falls more rapidly at the back than at the front. In other words the bevel of the rail increases with each draw of the mule until the maximum length of

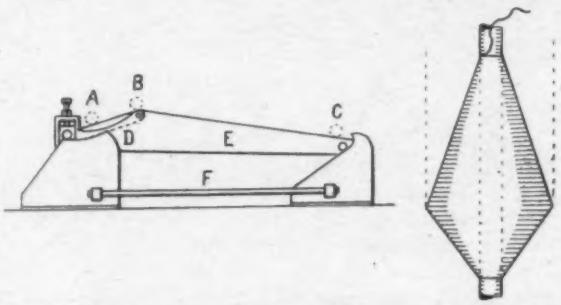



FIG. 3. RELATIVE POSITION OF THE COPPING RAIL ON THE COPPING PLATES WHEN THE COP BOTTOM IS COMPLETED. AT THE RIGHT IS SEEN THE POSITION OF THE YARN ON THE SPINDLES WHEN THE COP BOTTOM IS COMPLETED.

chase is reached at the shoulder of the cop. The very slight fall of the rail at the front copping plate builds the cop bottom continually larger in diameter until the shoulder is reached. As an illustration, the more fall there is to the front plate shoe curve, the longer and thinner will be the cop bottom. Again, the less fall there is to the front plate shoe, the more stubby and squat will be the cop bottom. Again, the more curve there is to the back plate the quicker the fall of the rail, lengthening the chase materially and thinning out the cop bottom. Again, the less fall there is to the back plate curve, the more the rail is retarded in its fall, giving a round stubby short cop bottom. The ideal is to have both curves working in the right proportion to give a good cop bottom as more than half of all cop winding and weaving troubles occur when the cops are reaching the bottom shoulder of the cop, and then on all through the cop bottom.

Thus the functions of the curves on the front and back

copping plates are for forming the cop bottoms, the front plate curve only falling enough to prevent slattering of yarn underneath the chase, and guaranteeing a certain diameter at the shoulder of the cop, and the back plate curve for lengthening the chase until the maximum is attained, at the same time exercising a great influence over the shape of the cop bottom by reason of shorter or longer chases, as described. (See Fig. 3.)

As the builder wheel has turned with every draw of the mule until the studs supporting the copping rail are just leaving the curves on the plates, we notice that the diameter of the cop has been reached, and that the rail studs are about to slide down the straight, planed, inclined parts of the copping plates, back and front. (See Fig. 3.) We also notice, however, that the front plate incline is greater than the back plate incline. Why is this? In order that the chase which was longest at the shoulder of the cop bottom may have a tendency to shorten as the cop builds up, and also compensate for the ever decreasing diameter of the spindle as the cops increase in size. A cop with a chase of say 2¼ inches at the shoulder of the cop bottom would have more yarn on it by shortening up to say 1⅝ inches at doffing time than if it stayed at the same length all through the cop.

It will be noticed that the quadrant nut is down near the bottom of the quadrant arm at the beginning of a set of cops. Hence, it will be seen that as the mule makes its inward run there is more chain unwound from the winding drum, as the arc of the circle described by the quadrant nut is very small when the nut is at the bottom. This imparts more turns to the spindle during the inward run of the carriage, which is necessary when the spindles are almost bare of yarn. However, as the yarn on the spindle accumulates with each successive winding of the carriage the quadrant nut must come higher up on the quadrant arm, which means that less and less winding chain is unwound from the winding drum as the arc of the circle of quadrant nut increases.

Let us follow the action of the quadrant arm through the inward run of the carriage. The mule backs off. The copping faller is ready to wind. The quadrant arm is back of the vertical. Run the carriage in to the top of the copping rail shoulder. What has happened? The quadrant has assumed the vertical, has given chain to the mule, in other words, although it has traveled towards the beam it has not unwound the chain from the winding drum to the extent it will after it passes the vertical. This giving somewhat of chain, from back of the vertical to the vertical is necessary, as it will be seen that the copping faller wire travels from the cop nose to the shoulder very quickly, and if the spindles revolved at the same speed at this point as they do when the copping faller wire is traveling from the shoulder to the nose of the cop, all the threads on the mule would be torn down. After leaving the vertical, the quadrant arc of a circle is traveling away from the beam somewhat as the mule runs in, thus unwinding more chain from the winding drum, consequently increasing the speed of the spindles as the mule nears the beam. As the quadrant governs the spindles during the inward run of the mule carriage, this is very important in copping. It is important to see that it is set right with relation to its vertical position, and that it has the correct quadrant pinion on it for the length of draw.

Before proceeding to tackle imperfect copping by interfering with the copping mechanism, see that all available tactics have been tried, such as experimental settings of the quadrant, tension of the quadrant bands, or, if a side shaft quadrant, see that experiments are made in moving the quadrant a tooth or more backwards or forwards, replacing the pinion accurately after the quadrant has been moved. If the quadrant bands are used, besides looking out for the tension, as mentioned, see that equal parts of the bands, both long and short, are on the scroll as the mule is at rest near the beam. If all these usual tricks are tried, and the experienced overseer is convinced that he has something vitally wrong with his copping, then it is time to consider the remedy radically.

[This is the first of a series of articles on "copping." Others will follow in later numbers.—Editor.]

## Tannic Acid.

The tannins are a large class of substances which have the power of combining with hide and thereby converting it into leather. They occur widely scattered in the vegetable kingdom and may be divided into two classes depending upon whether their formation is physiological or pathological. The physiological tannins occur naturally in the wood, bark, leaves, fruits, and seed pods of many plants. When soaked in water, these materials yield extracts that find extensive use for tanning. The extracts contain in addition to the tannin many other substances, including coloring matters, resins, and carbohydrates from which the tannin can only be separated with great difficulty. These non-tannin substances, however, do little or no harm or in some cases may be even advantageous and ordinarily no attempt is made to prepare a pure tannin from these extracts.

The pathological tannins are formed on plants following the sting and deposition of eggs by insects which causes pathological growths known as galls, or gallnuts or nutgalls. These nutgalls contain a high percentage of tannin and are the best raw material for the manufacture of pure tannin or tannic acid. Tannic acid finds important uses in the textile and chemical industries, but is not used commercially for the tanning of leather. Gallic and pyrogallic acids serve quite different uses but are made from tannic acid, and are, therefore, conveniently discussed with it. Since the fundamental raw material is not produced in significant amounts in the United States the industry is dependent on foreign supplies, which come chiefly from two sources, China and Asia Minor.

Nutgalls or gallnuts or galls are excrescences or pathological growths produced on certain plants by the deposition of eggs by certain insects. The larvae of the insects grow within this shell and eventually the insect pierces the shell and escapes.

Chinese and Japanese nutgalls grow on a species of sumac owing to the deposition of eggs of the insect *Alphis chinensis*. They are hollow shells of irregular shape about the size of a walnut, and contain 60 to 70 per cent of tannic acid.

Turkish nutgalls, commonly called Aleppo galls, are produced on young shoots of an oak following the deposition of eggs of a wasplike insect, *Cynips*.

Some galls are also produced in northern European countries, but these are of relatively little importance.

The terms, tannic acid and tannin, when used in commerce refer to what is, chemically, gallotannic acid. Tannic acid appears in commerce in two grades, one a highly purified form conforming to the specifications of the United States Pharmacopœia known as tannic acid U. S. P., and the other a less pure or technical grade. It is a non-crystalline solid, white when pure, but yellow, grey, or brown if impure, and is readily soluble in water.

Tannic acid gives insoluble precipitates with the salts of many metals, especially tin, iron, chromium and antimony. This property is much utilized in dyeing textiles and furs since such compounds of tannin and metal have a strong affinity for many dyes. Another important use is in the manufacture of ink.

Lesser uses of tannic acid are in the manufacture of some color lakes, in the clarification of wines and some fruit juices and in pharmacy, and as raw material for the manufacture of gallic acid and pyrogallic acid.

The extracts and decoctions of nutgalls are water solutions made from nutgalls containing tannic acid as their essential ingredient or a solid obtained by the evaporation of such solutions. There is no sharp and well-defined distinction between the technical grade of tannic acid or tannin and a solid extract of nutgalls, although as a rule the term, tannic acid, is applied to better grades than the term, extract of nutgalls.

Gallic acid, or trihydroxybenzoic acid, is contained in many tanning extracts, but is obtained commercially from tannic acid or direct from nutgalls. It is a white crystalline substance when pure and is used chiefly for the manufacture of dyes, pyrogallic acid, and ink, and in medicine. Gallic acid has played an important part in the development of the new American dye industry since it is used in the manufacture of Gallocyanine Blue, which has been much used for dyeing the wool used in navy uniforms.

Pyrogallic acid, or pyrogallol, or trioxybenzol, is a white crystalline solid made by heating gallic acid. It is the oldest of the photographic developers and is probably the most used. Pyrogallol itself and several products made therefrom are used in medicine. Another use is for the dyeing of fur and hair and for staining wood. Pyrogallol is an important reagent in the chemical laboratory, being used as an absorbent for oxygen gas in gas analysis.

Nutgalls are the most satisfactory raw material. The nutgalls vary in quality according to the region of origin and the time of collection. They are of better quality and richer in tannic acid if collected before the insects escape. Good quality nutgalls contain up to 70 per cent of tannic acid.

There are several methods of preparing tannic acid. In one process the nuts are extracted with water and the solution filtered from insoluble matter and then extracted with ether, which removes much of the impurities without removing any tannic acid, followed by the evaporation and drying of the tannic acid solution.

Another process is to extract the galls with dilute denatured alcohol, which dissolves the tannic acid, together with some other materials. The alcohol is recovered by distillation and the residue treated with chemicals, which assist in the elimination of resinous impurities. The aqueous solution is then evaporated to dryness, yielding technical tannic acid.

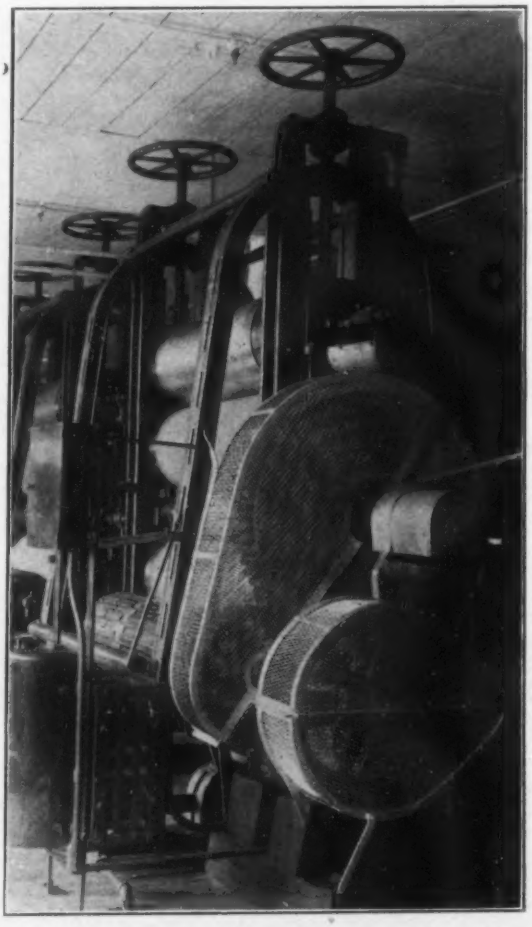
There is still another method, similar to the foregoing, which depends on the use of acetone as a solvent instead of denatured alcohol.

To prepare pure tannic acid U. S. P., the technical grade may be dissolved in water and precipitated as the lead salt by the addition of acetate of lead. The precipitate is then washed, filtered, suspended in water, and decomposed with hydrogen sulphide, yielding insoluble lead sulphide and a solution of tannic acid, which is then filtered and evaporated to dryness.

Gallic acid may be made from tannic acid but is usually obtained directly from nutgalls. The crushed nutgalls are moistened and exposed to air, whereupon they become covered with a mold which by fermentive action decomposes the tannic acid to form gallic acid. Gallic acid may also be obtained from the nutgalls by heating with a dilute solution of sulphuric acid. The gallic acid is extracted with hot water and purified by crystallization. Gallic acid differs from tannic in that it can be crystallized from water.

Pyrogallic acid is made from gallic acid by heating to about 200 degrees C. in a glycerine solution or heating in aqueous solution in an autoclave. The resulting pyrogallol solution is decolorized and evaporated and the pyrogallol recovered by crystallization. It may be purified by sublimation.

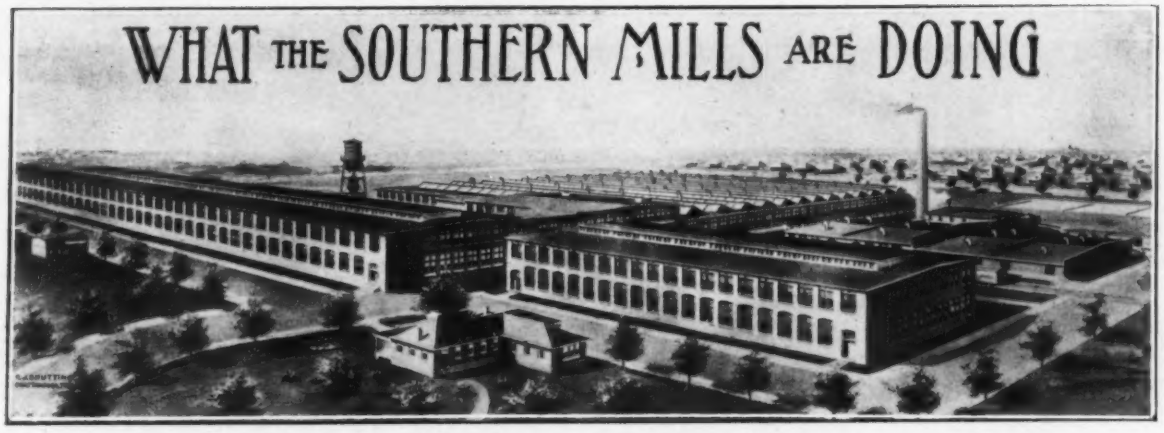
---



A GUARD FOR CALENDER DRIVING GEARS.

Courtesy National Safety Council.

# WHAT THE SOUTHERN MILLS ARE DOING



A GENERAL VIEW OF THE JUDSON MILLS, GREENVILLE, S. C.

A pleasant automobile ride of a half hour or so from Greenville, S. C., will take the visitor to the Judson Mills, one of the 19 progressive textile establishments of this progressive textile manufacturing city. Judson Mills is a typical southern mill and, being located in Greenville, it is afforded a number of features attributive to successful operation, but the ability of the organization to work out difficulties, to evolve and perfect methods for the best interests of the mill and the workers, is evidenced by its steady and continued growth.

The first organization of what is now the Judson Mills was effected in 1910, when the Westervelt Mill was established. This plant was founded by men who conceived the idea of manufacturing fine goods in the South. Operations were begun in 1911. Later the plant was reorganized and renamed the Judson Mills in honor of Dr. C. H. Judson of Furman University, and taken over by the present management, under whose direction it has been successfully operated since that time. It is known as the first fine goods mill in the South, and in the field it has, through the foresight of its builders and the efforts of its management, retained a leadership in the new scope of endeavor which it opened in the southern states.

Judson Mills have 52,640 ring spindles, 9,576 twister spindles and 1,288 looms included in their manufacturing equipment, working on the production of the cotton mill. The product of the mill includes India lawns, fancy silk and cotton mixed dress goods, and fine combed yarns. An intercommunicating and general call system has been installed and is in use at this mill. Their humidifying system is of the Turbo-Humidifier type, made by the Parks-Cramer Company.

A feature which proves of invaluable assistance, particularly during periods of railroad congestion, is the spur tracks which the Judson Mills have run to their shipping room. One track is from the main line of the Southern Road from Washington to Atlanta, the other comes from the lines of the Piedmont & Northern Railroad.

The feature which perhaps attracts the greatest interest of the visitor to this plant, and to which the mill officials point with much pride and satisfaction, is the silk mill which is operated in connection with the cotton mill proper. The silk mill has been in operation for four years. It is the only mill in the South that processes its own silk from the bale to the loom beam ready for weaving. The silk is used in both the warp and filling for making fancy stripes and plaids. It is of interest to note that this silk is now being utilized in 80 per cent of the mill's output. Visitors to the Fourth Southern Textile Exposition were pleasantly surprised and amazed at the wonderful patterns woven at Judson Mills.

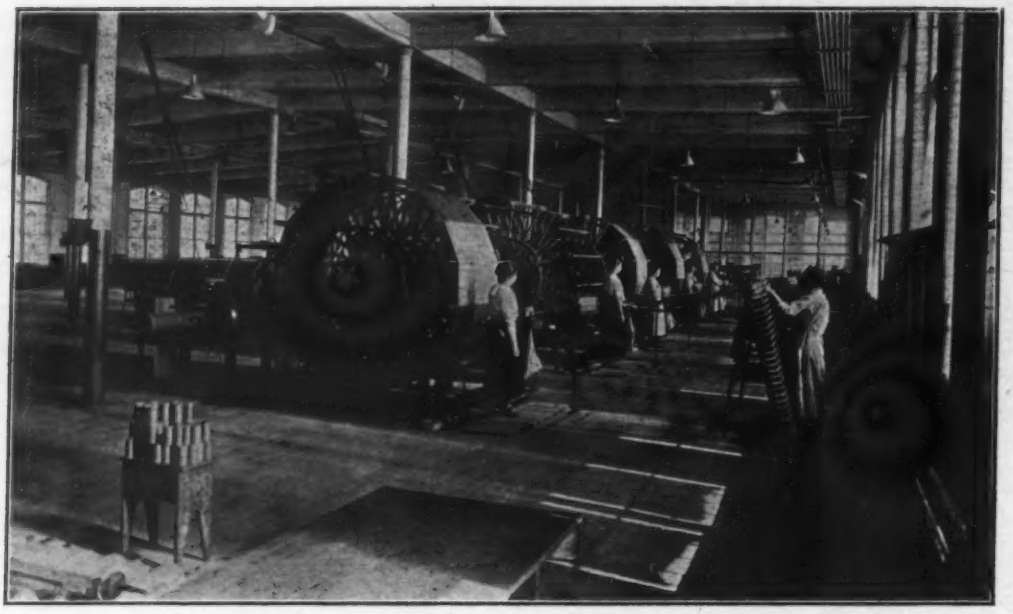
The raw silk comes to Judson Mills in skeins, which are tied in "books" and these in turn in bales, which are imported from Japan, Italy or China, depending upon the kind of silk specified. The silks used are Yellow Japan, Yellow Italian, Canton and Tussah—the latter two being Chinese silks. As their names indicate, the first two kinds named are yellow, the Canton being white; and the Tussah, which is a wild silk, whose worms feed on oak leaves, is of a brownish color. These colors are the natural colors of the silk as spun by the worm.

The first process in the mill is opening the silk. The skeins being twisted for packing in the bale, they must be untwisted and tied into bunches for the following process, which is soaking. For this process an emulsion of olive oil soap and special silk oil with warm water is used. The bunches of silk are immersed in warm emulsion and allowed to soak for an hour and a half. The object of this process is to loosen up the gum which the silk worm puts on the silk. The soap and warm water accomplish this purpose and allow the silk oil to penetrate the yarn, which keeps it soft and pliable for processing throughout the mill.

After soaking, the water is drained off and the silk is run through a hydro-extractor, preventing the skeins from becoming tangled or snarled, as would be the case if they were wrung out by hand. The skeins are taken from the extractor to the drying line, where they are straightened out by hand, one skein at a time, and placed carefully over brass wires to dry in the open air.

The next process is winding, which winds the yarn from the skeins onto a wooden spool. This operation requires highly skilled operatives, since the skein is apt to become tangled unless the operative is very careful in finding and tying up broken ends.

The processes so far have been the same for all the different kinds of silk. From here on they differ, the Canton and Tussah going to the quillers for winding onto filling cops; while the Yellow Japan or Italian goes to the warpers to be made into warps. The warping process is probably the most tedious of all and requires the most

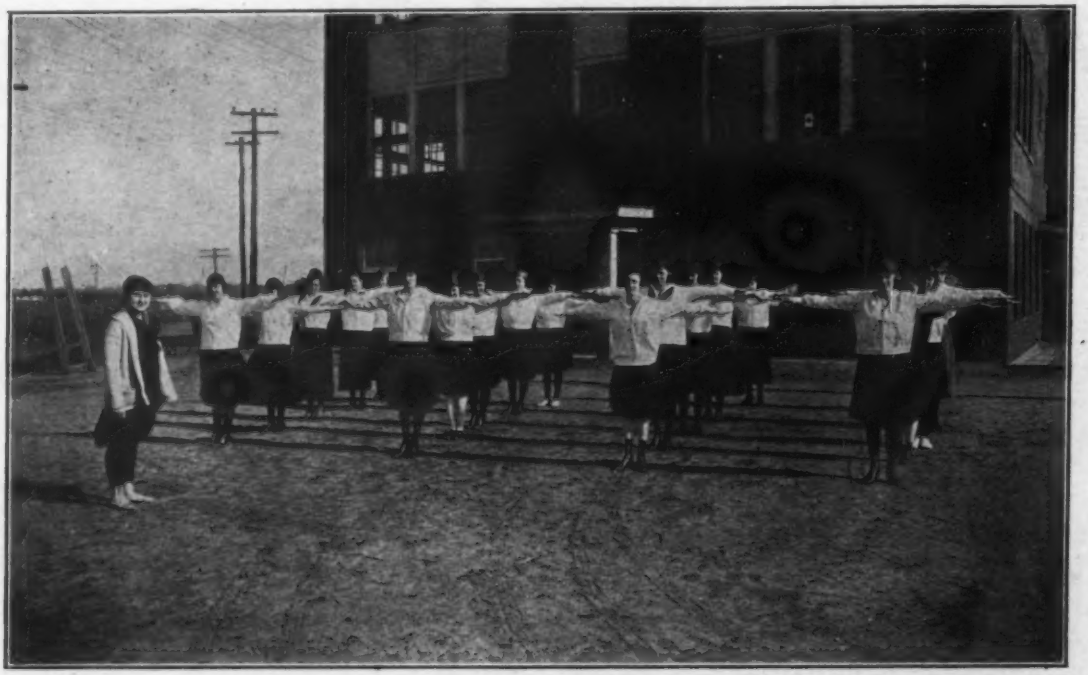


ONE OF THE SILK DEPARTMENTS AT THE JUDSON MILLS.

experienced operatives. The spools are taken from the winders to the warper creels, where the ends are drawn through three reeds. If the warp is to contain less than one thousand ends, the ends are run straight from the creel through the reeds onto the beam, which is then ready for the loom. If more than one thousand ends are wanted, however, the warp must be made on a Swiss motion horizontal warper, which resembles the paddle wheel of a river boat. Here the ends are run onto a skeleton reel eight yards in circumference in sections of five hundred ends or less at one time. All the sections are run exactly the same length and set side by side on the reel. When the required number of sections and ends have been put on the reel, the process is reversed and the total number of ends run off at the same time onto the loom beam, which is then ready for the loom.

Some idea of the size of the silk yarn run in this manner can be obtained from the fact that it corresponds to 250s in cotton yarn numbers, there being 211,600 yards to one pound, slightly over 120 miles. Each skein is one thread about 19 miles long.

One would think that to accomplish the results that are



THE JUDSON GIRLS ALSO DO GYM WORK.

A SEWING CLUB IN JUDSON COMMUNITY HOUSE.

being secured in this plant, and to carry out the various intricate and unusual processes in the manufacture of this silk, the services of an expert long-trained in the art of silk-making would have to be utilized. However, an interesting fact about this proposition is that the Judson Mills, when the silk mill was begun, did not "import" a single person to handle the work. Those who operate the silk mill are people who have never received any outside special training in this work. J. W. Stribling is in charge of the silk room. He received his technical training along textile lines at Clemson College.

Judson Mills has a motto which runs something like this: "We are not alone interested in the manufacture of fine goods. We are also proud of the manhood and character of our employees." They, in common with many southern textile manufacturers are developing, or have in use and operation, many features tending toward the increasing of the employees' morale, aiding in the bettering of conditions and promoting in the workers an increased interest—in themselves and in the affairs of the organization by whom they are employed.

Among the outstanding features of the community service work being carried out at Judson Mills is the community store which is being operated solely for the benefit of the operatives at this plant. This store is divided into three sections, the dry goods department, the grocery and the meat market. All who visit this place pass favorable comments upon it. It is officially inspected at regular intervals as is customary with the commercial markets of the city, and many have stated that it surpasses in cleanliness and sanitation many seen in large cities. The grocery and meat departments are conducted upon a cost plus plan, that is, the operatives are furnished with many of the exigencies of life at their actual cost to the store, plus a small percentage for operating expenses.

The mill property includes some several hundred acres. On this property the mill has built over 300 modern, comfortable houses for its operatives. All houses have electric lights and running water, and sewerage is now being installed. The population of the mill village is about 2,000, while there are about 800 employees and over 400 school children. A thoroughly modern school building is furnished by the mill and the most competent principal and teachers are employed. At present there are eleven grade-teachers in addition to the principal. The mill also employs a dentist and physician for clinic work, also a nurse and a community worker.

THE SCHOOL BUILDING AND COMMUNITY HOUSE, JUDSON MILLS.

The lives of all employees are insured free of charge by the mill. The mill also furnishes coal, wood, oil stoves, electric irons and other necessities and conveniences to the employees at cost.

The community house of this village has recently undergone extensive renovation. This building now includes the following community service features: rest rooms, reading rooms, domestic science kitchen, cannery, operating room, gymnasium, shower baths, etc.

Tennis courts, basket ball and volley ball courts, and other opportunities for recreation are given the employees of this mill. The playground is modern and up-to-date and complete play ground equipment has been installed. Young tots as well as the older folks make good use of the varied apparatus.

A great deal of interest is being shown in basket ball by the men and boys at Judson. Boys play among themselves all day long on the outdoor court and at 5:30 each afternoon the practice for the regular team is held. From this bunch of aspirants a team will be selected to represent Judson in the basket ball tournament which will be conducted in Greenville on February 24, 25 and 26 by the Southern Textile Athletic Association in which more than 30 entries are expected from mills in North Carolina, South Carolina and Georgia. The company has fitted up a first class indoor court in the community building which will be used for the home games of the basket ball team.

The Judson Mills also have a baseball club, which was very successful in 1920, losing only two games during the entire season. The team was composed entirely of employees who gave their services entirely free to the team.

There is at Judson Mills a working girls' club known as the "Joan of Arc Club" which has thirty-five members and which holds regular meetings once a week in the community building. The work of the club consists of sewing, cooking, singing, recreation, and training in citizenship, and the organization has as a part of its program the rendering of some kind of service to the community. From time to time special meetings, parties, socials and banquets are given by the club. Each year two delegates are sent by the club to the Y. W. C. A. Industrial Conference.

Recreation plays a big part in the life of the people at Judson. The playground is one of the finest and most completely equipped in the state. Here the children are taught how to use the apparatus and how to play team games. A new gymnasium has been built with a maple hardwood floor and equipped for basketball, volley ball and other games. There are physical training classes for the working girls, the school children, and a special class for the undeveloped children, in which the program consists of calisthenics, team games, stunts and marching tactics. There are basket ball teams and volley ball teams among the children and girls as well as among the men, and these have scheduled match games with the various other neighboring teams. From time to time hikes are taken into the country in the form of weiner roasts, and marshmallow toasts, which are a stimulant to more outdoor life. In the summer, various groups are taken to the mountains on camping trips.

The Mother's Club, which meets twice a month, is under the direction alternately of the school supervisor, the community nurse and the recreational leader. Child welfare, health talks, the correlation of the home and the school, instruction in practical dietetics and physical culture are some of the phases of work taken up at these meetings.

The school building is equipped with a modern domestic science equipment where classes in cooking and sewing are held weekly. There is also equipment for holding banquets, parties, suppers and entertainments of various kinds, which are held under the auspices of the various community organizations.

There are two well organized churches at Judson. The Baptist has for its pastor Rev. H. E. Waldrop, who devotes his entire time to this church. Rev. P. L. Bauknight is pastor of the Methodist Church and divides his time between this church and the Dunean Methodist Church. Both churches at Judson have splendid Sunday school organizations and auxiliary organizations such as Baptist Young Peoples Union and the Epworth League.

For over four years this mill has employed an industrial nurse for the benefit of the employees and their families. This year the management has established a medical and dental clinic, which is conducted free of charge to all children in school and all those not in school under 14 years of age. The dental clinic is held weekly and the health clinic is conducted daily. The youngsters line up eagerly awaiting to get in the dentist chair so that they can have clean, white, sound teeth.

The staff of workers in the medical department consists of a doctor, a dentist and a nurse. The clinic rooms are located in the new, modern school building and include a large reception room, an emergency operating room, a consulting room, a dental office and a loan closet. The last named feature contains supplies for the sick room which are loaned to the families in the village when needed in case of sickness. Each room in the clinic is equipped with modern, up-to-date equipment. This includes a Lung-motor for cases of shock or accident.

The doctor is in his office each morning from 8 to 10 o'clock and his services are given free at this time to all children under 14 years of age. The mill also has each child in school examined and vaccinated each year free of charge. The doctor in charge of the clinic also supervises the school lunch for anemic and undeveloped children. The medical clinic is visited not only by the school children, but also by the children and babies of the village who are under school age.

The dentist conducts the examination of all school children's teeth and follows this with work on the teeth when needed, including filling, cleaning, treatment and extraction. Lectures are given on dental hygiene, and literature is distributed explaining the proper care of the teeth. The standard of the child life is greatly raised by the training they receive in the two clinics.

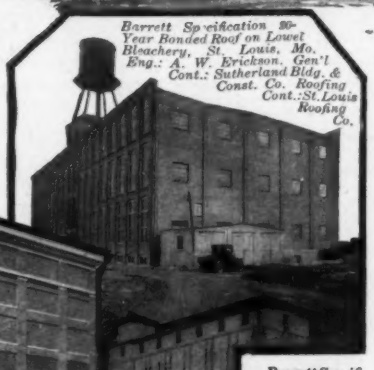
The nurse divides her time between the family and school, also assisting with the accident work in the mill when needed. The work in the homes consists of prevention nursery and to this end she must demonstrate what she teaches by giving good bedside care to the sick patient, also lessons in the preparation of nourishment for sick patients. The follow-up work from the school, dental and medical clinics takes the nurse into the homes of the workers.

Authority for an increase in its capital stock from $500,000 to $750,000 has been granted to the Mollohon

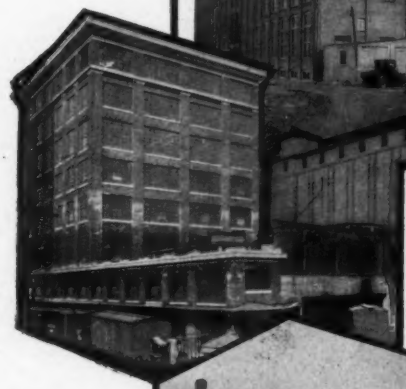
# Barrett Specification Roofs

*Bonded for 20 and 10 Years*

*Mill and Elevator of Valier & Spies Milling Co., St. Louis, Mo. Eng. and Gen'l Cont.: Jas. Stewart & Co., Inc., Chicago, Ill. Roofing Cont.: St. Louis Roofing Co., St. Louis, Mo.*

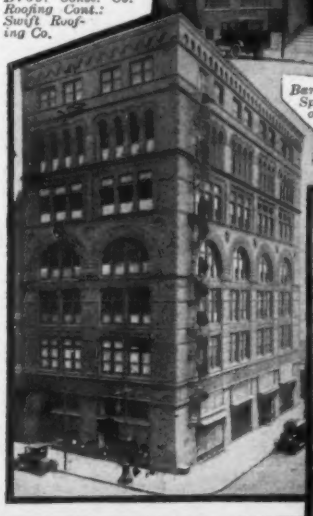


*Barrett Specification 20-Year Bonded Roof on Lowet Bleachery, St. Louis, Mo. Eng.: A. W. Erickson, Gen'l Cont.: Sutherland Bldg. & Const. Co. Roofing Cont.: St. Louis Roofing Co.*



*Barrett Specification 20-Year Bonded Roof on building of Plant Milling Co., St. Louis, Mo. Arch. & Eng.: Lichter & Jens. Gen'l Cont.: Frum-Colnon Cont. Co. Roofing Cont.: St. Louis Roofing Co.*

*(Below) Barrett Specification Roof on Exchange Building of Southwestern Bell Telephone Co., St. Louis, Mo. Arch.: I. R. Timlin Engineering Dept. Gen'l Cont.: Murch Bros. Const. Co. Roofing Cont.: Swift Roofing Co.*



*Barrett Specification 20-Year Bonded Roof on building of Johnston Tin Foil & Metal Co., St. Louis, Mo. Arch.: C. H. Deitering. Gen'l Cont.: Murch Bros. Const. Co.*

*(At Left) Barrett Specification 20-Year Bonded Roof on building of Ely & Walker Dry Goods Co., St. Louis, Mo. Arch.: Eames & Young. Roofing Cont. Columbia Roofing Co. Gen'l Cont.: Jas. Stewart & Co., Inc.*

*Barrett Specification Roof applied by owners over old pitch, felt and gravel roof on Heel Factory of International Shoe Company, St. Louis, Mo. Arch., F. Hume. Roofing Cont.: Swift Roofing Co.*

## They are all "from Missouri"—

When it comes to spending their clients' money, architects and construction engineers invariably take the "show me" attitude. Figuratively, they are all "from Missouri."

And the more they insist upon having proof of the durability and economy of the materials which enter into a building, the surer is that building to have a Barrett Specification Roof.

In St. Louis, the hustling metropolis of the Central Mississippi Valley, the "show me" spirit is fully developed; consequently Barrett Specification Roofs cover many of the city's modern buildings.

In a Barrett Specification Bonded Roof the owner not only gets a roof that has proved its superior economy on thousands of buildings all over the country, but he also gets a roof that is bonded for a long term of years against all upkeep expense.

### Our Guarantee is a Bond

The Barrett Guarantee is a Surety Company Bond which costs the owner nothing and which absolutely protects him from the expense of roof repairs and maintenance.

This Bond may be obtained on any Barrett Specification Roof of 50 squares or larger, in towns of 25,000 or more, *and in many smaller places where our inspection service is available.* Our only stipulations are that the roofing contractor shall be approved by us and that The Barrett Specification, *revised April 15, 1920,* shall be strictly followed.

The Barrett Specification Type "AA" 20-Year Bonded Roof represents the most permanent roof covering it is possible to construct, and while we bond it for 20 years only, we can name many roofs of this type that have been in service over 40 years and are still in good condition.

Where the character of the building does not justify a roof of such extreme length of service, we recommend the Barrett Specification Type "A" Roof bonded for 10 years. Both roofs are built of the same high grade materials, the only difference being in the quantity used.

*Full details regarding these Bonded Roofs and copies of The Barrett Specifications sent free on request.*

New York, Boston, Cincinnati, New Orleans, Syracuse, Milwaukee, Toledo, Buffalo, Chicago, St. Louis, Pittsburgh, Birmingham, Salt Lake City, Bangor, Columbus, Baltimore

The Barrett Company

Kansas City, Seattle, Washington, Richmond, Omaha, Minneapolis, Peoria, Johnstown, Latrobe, Houston, Philadelphia, Cleveland, Detroit, Dallas, Atlanta, Lebanon, Bethlehem, Denver, Nashville, Duluth, Youngstown, Elizabeth, Jacksonville

THE BARRETT COMPANY, Limited:
Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.

Cotton Mills, at Newberry, S. C. The Newberry Cotton Mills, at the same place, have increased their capital stock from $800,000 to $1,000,000.

The new extensive addition to the Proximity Print Works, Greensboro, N. C., is expected to be in operation by January 1, 1921. This extension will give the plant three times its present capacity and will give employment to about 250 more persons. Among the major items in the construction and extension program are a new bleachery and a new dyehouse. This building is 125 x 200 feet, one story. The new printing and finishing room is 100 feet wide and 284 feet long, two stories. Four new printing machines are being installed. The bleachery will have a daily capacity of 100,000 yards. The finishing equipment being installed will increase the output to 200,000 yards a day. A large new steam plant is being built and new boilers and turbine are being installed. An important improvement is a new filtering plant of 25,000,000 gallons capacity, now in process of construction. A number of new bungalows are being built and a new hotel is being constructed in the village.

Amendments have been granted to the Hart Cotton Mills, Tarboro, N. C., increasing their capital stock from $250,000 to $1,000,000.

The Lincoln Cotton Mills, Huntsville, Ala., have installed three 1,000 candle-power searchlights on the top of the mill water tank tower, two pointing south and one pointing north. These are used to light the mill village in lieu of street lights.

The Pelham Division of the Consolidated Textile Corporation, at Pelham, Ga., will install 88 wide looms. Provision is also being made for an addition to the slasher room. The additional machinery as being installed will allow the weaving of the entire spindle production of the plant.

A large, modernly equipped hotel is under construction in the mill village of the Tucapau Mill, Spartanburg, S. C. A laundry and an ice plant with a capacity of 18 tons of ice a day were installed at this mill recently.

The Mays Mill, Inc., Mayworth, N. C., of which H. L. Moore is secretary, are having plans prepared for improvements and extensions at their plant.

Elwag Manufacturing Company, Salisbury, N. C., has been organized with an authorized capitalization of $100,000, for the manufacture of underwear and overalls. J. M. Waggoner, F. W. Waggoner and W. J. Elmore, all of Salisbury, are the incorporators.

The Blair Mills, Belton, S. C., have been granted authority to increase their capital stock from $25,000 to $100,000.

The formal opening, with suitable program, of the new $75,000 community house of the Highland Park Manufacturing Company, Charlotte, N. C., was held on October 28. Night classes and athletic work have been started under the supervision of the superintendent, E. G. Carson, and the services of a corps of trained nurses will be utilized.

The Hillsboro (Texas) Cotton Mills have increased their capital from $90,000 to $300,000.

The South Texas Cotton Mills, Brenham, Texas, are being enlarged and new equipment is being installed. It is reported that an addition to the present buildings is being erected at a cost of $5,000. This addition will house additional spindles and other equipment.

The Pelzer Manufacturing Company, Pelzer, S. C., has given contract for two new community buildings to be erected at that mill, it is reported.

The Miller Cotton Mill has begun operations at Waco, Texas, with W. D. Ingle a former North Carolina man, as superintendent.

An interesting departure from usual methods in the operation of a group of cotton mills has been put into practice at the southern headquarters of the Consolidated Textile Corporation, Greensboro, N. C. The office at that place is using wireless telegraphy to keep in daily touch with the mills located in three other cities which are under the same management. A wireless station has been installed at Greensboro and stations established at the company's plants in Burlington and Raleigh, N. C., and Lynchburg, Va. The installation of the wireless system was adopted through a suggestion of an employee of the company who was a wireless operator in the army service in France. This employee suggested that the large telephone bills incurred by frequent communication with the other mills could be lessened by the use of the wireless. The suggestion was adopted and it is stated that the wireless system is being used daily with very satisfactory results.

At the regular fall meeting of the Board of Governors of the American Cotton Manufacturers' Association which was held recently, Philadelphia was chosen for the place of the 1921 convention. The date of the meeting will be announced later by the Board of Governors. C. E. Hutchison, of Mount Holly, N. C., presided at the meeting in his capacity as chairman of the Board of Governors, and a representative number of the Board's members were present. There were interesting discussions of the federal tax situation and other subjects of interest.

## Cotton Comment.

BY H. AND B. BEER.

New Orleans, Nov. 20th, 1920.

Heavy curtailment by American mills having followed in the wake of the price deflation movement depressed the market further the past month, as did unfavorable trade advices from Manchester.

Apparently jobbers and merchants are endeavoring to dispose of goods made of high price cotton as best they can and hope to accomplish their purpose during the holiday period. In the meantime they have not been favoring the mills with new business, and for the want of new orders manufacturers have been obliged to adopt short time, half time in many instances, while a few mills have closed down for an indefinite period.

The foreign demand, while not brisk, has been fairly good, as indicated by exports from the United States to Europe to November 19th—1,415,000 vs. 1,496,000, or by takings of American cotton by European mills since August 1st—1,341,000 vs. 1,489,000.

The trouble with the market is that American spinners have been virtually out of the market thus far this season to such an extent that during the past week southern mills took only 91,000 bales vs. 191,000 last year, and northern mills took only 32,000 against 106,000, or a total by American mills of only 123,000 compared with 297,000, whereas foreign mills took 110,000 vs. 103,000.

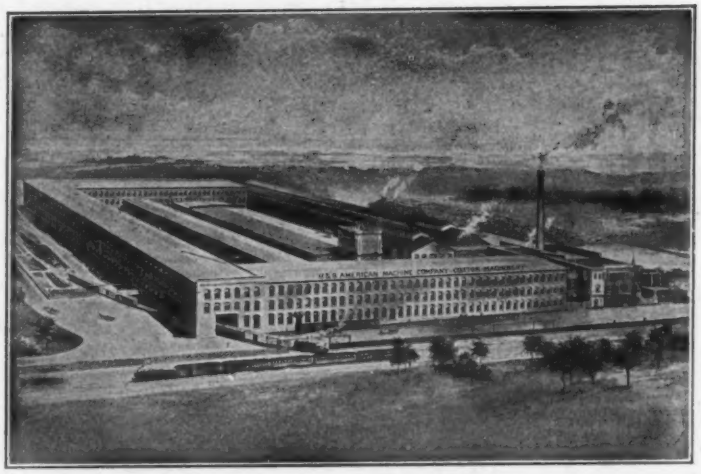
C. E. RILEY, Pres.
Boston Office
161 Devonshire Street

Southern Office
Atlanta Trust Co. Bldg.
Atlanta, Ga.

# COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

## H & B AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

Going further into the matter the small takings by American mills since August 1st show that American mills took 809,000 bales less than that for the corresponding time one year ago—1,260,000 vs. 2,069,000, of which southern mills are credited with only 890,000 against 1,278,000, and northern mills with only 370,000 vs. 791,000.

It is not surprising, therefore, to find values 3 cents lower than one month ago when values were already much depressed.

Meanwhile stocks of goods in merchants' hands and mill reserves of raw cotton are being depleted rapidly, and it is likely that the very low prices now prevailing, about 15 cents basis of middling in the interior vs. about 38 cents at this time last year, will be attractive to spinners especially American mills who have small stocks of the raw product.

The Census Bureau issued a report on 13th inst. showing the following comparatives:

| United States. | This Season. | Last Season. |
|---|---|---|
| October consumption, inc. linters.... | 439,000 | 582,000 |
| Consumption, 3 months. inc. linters .. | 1,453,000 | 1,615,000 |
| Mill stocks October 31st ..... | 944,000 | 1,365,000 |
| Stocks in public storage October 31st | 4,167,000 | 3,687,000 |
| Total stock Oct. 31st ..... | 5,111,000 | 5,052,000 |
| Active Spindles Oct. 31st..... | 33,609,804 | 34,344,095 |

As noted above American mill stocks on October 31st were 421,000 bales less than last year, and while mill curtailment of production has been heavy, takings by American mills have been comparatively smaller and it is likely that domestic mill stocks will show a greater deficit compared with last year at the close of November than was shown at the end of October.

Of late there has been a tendency to increase crop estimates, which now hover around 12,750,000 to 13,000,000 bales exclusive of linters compared with the last government forecast for 12,123,000 bales issued in early October. However, general ideas of the year's probable yield differ materially, but these differences in opinion will be settled by the government's final crop estimate, due early in December. To November 1st. the Census Bureau reported 7,471,000 bales ginned vs. 6,305,000 last year and 7,777,000 in 1918 when the crops were 11,325,000 and 11,906,000 bales respectively, linters not included.

The future of the market will depend very much as to how long the present heavy curtailment by American mills continues and how long it will be before American spinners enter the market for cotton in volume to replenish their small stocks of the raw material.

Cotton at 15 cents is considered an investment, being about $50 per bale below the cost of production, and unless prices advance materially in the future, there will likely be a drastic reduction in the acreage next spring.

---

N. H. LANE died early in the morning of Nov. 20th at the age of 73. He had been in failing health during the past year. For forty years Mr. Lane had been active in the dyestuff and chemical business as a manufacturing chemist, the last twenty-five of which he was a partner in the firm of Bosson & Lane, Atlantic, Mass. A conscientious and indefatigable worker, he found his greatest enjoyment in his business and home life and while always interested in public questions he chose the modest part of a private citizen. He was born in Danville, Vermont, and came to Massachusetts at the age of 25.

---

The Draper Corporation, Hopedale, Mass., is sending out to its customers and friends for use in 1921 its usual attractive calendar.

# If You Want Efficiency Install a Lunch Room

*Installation of Robert Gair Company, Brooklyn, N. Y.*

*Look for the "Raised-Rim"*

***—healthier workers***

***—less labor turnover***

***—buy permanent equipment***

A COLD lunch, carried in a dinner pail or lunch box, becomes uninviting by lunch time. A hot meal at noon produces energy and promotes efficiency and industrial contentment. You can serve a hot meal in your plant at a minimum cost by installing a ***Sani*** lunch room.

The U. S. Department of labor estimates that it costs $500.00 to train the average employee for permanency. Why not save this money? A ***Sani*** lunch room in your plant will reduce the labor turnover and your employees will not want to move from one plant to another.

***Sani-Onyx*** table tops are *radiantly-white*, durable, easy to clean and as hard and smooth as polished glass. The *"Raised-Rim"* (our exclusive patent) prevents chipping and dripping. ***Sani-Metal*** table bases are made of fine-grained cast iron, heavily coated with porcelain enamel. No projections or crevices for dirt to collect.

## Write In Today

We will send you our latest catalogue showing all kinds of ***Sani*** food and drink equipment. This beautiful book contains valuable information and many illustrations. Send us your floor plan and our engineering department will lay out your space free of charge.

*These materials may be purchased from local distributors. Our export department completely equipped to handle foreign business.*

**Sani Products Co.**

**668 Sani Building, Chicago, Ill.**

## The New England Mill Situation.

The curtailment of production among New England cotton mills has become extraordinary. In a recent week hardly 25 per cent of the capacity of New England fine goods mills was in operation. In Fall River fully 60 per cent of the machinery was not producing. Throughout Rhode Island some of the largest plants are running three and four days a week. In northern New England large plants like the Amoskeag and Pepperrel are operating a limited part of the plants on short time. No similar volume of curtailment has ever been known although there have been times when the industry, then consisting of a much smaller investment was virtually prostrate.

Finishing companies have been operating as little as 25 per cent of some parts of their plants and only in rare instances have any of them been doing better than 50 per cent. The large print works have been operating about 50 per cent. Some of the machinery plants have cut down on working forces although keeping up full time.

There has been very little demand for the product and most of the mills have run out of orders that are in any way urgent. Although many plants are running as short handed as they can and maintain an organization, they are accumulating goods. These accumulations are costing in many instances 40 per cent more than the goods are worth in the open markets. Old and high priced cotton is being used up and old and high priced stocks of coal are being drawn on. The limited output has naturally increased the overhead cost out of ratio to the normal. It would be difficult to over-exaggerate the gloom that is felt in some circles.

At the wage conference between unions and manufacturers in Fall River the futility of trying to secure relief from wage reductions was clearly seen and it was decided to allow the current schedule to continue after December 6, when the date of expiration of agreements comes around. There have been some reductions in other centers ranging from 15 to 20 per cent.

The wage arrangement arrived at does not preclude either party, unions or manufacturers, from asking for new conferences looking to change so that if business revives and something can be accomplished in the matter of profitable operation at lower wage costs, the question will be brought up and operatives will be asked to accept reductions. As matters stand today a 40 per cent reduction in the wage scales in print cloth mills would not enable the mills to produce profitably. Print cloths dropped to a basis of 7½ cents a yard in the third week in November as against a top price of 26½ cents a yard in April. And at the low price the sales of cloths at Fall River for four weeks averaged less than 20,000 pieces weekly, or considerably less than a day's output.

The reasons for a postponement of wage action are many, in addition to the one already stated, i. e., the futility of hoping for relief from any reasonable reduction that could be agreed upon. The Fall River manufacturers do not want to provoke trouble with the unions unless something definite is to be gained. Naturally the unions will resist reductions in schedules when living costs are not appreciably changed and when there is no possibility of assurance being given that steady work will follow the acceptance of any lower scale. Fall River would prefer that other centers should inaugurate reductions if there are to be any this winter or before trade begins to revive in a positive way.

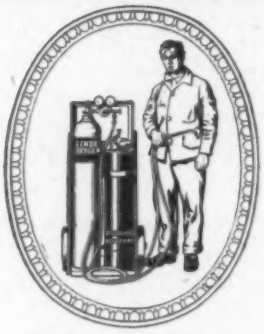
During the past two months the corporations held stockholders' meetings at which reports of large earnings were made and further dividends were declared. To go before the country demanding lower wages under such conditions would invite a great deal of adverse criticism in the event of a strike of operatives being declared. This was conceded by manufacturers. While they know that wages will have to be reduced in a substantial way they much prefer to bring the reduction about harmoniously in view of the absence of serious friction during the long war period.

Provoked by comments in a New York daily newspaper there has been a great deal of discussion among manufacturers and operatives concerning the actual cost above cotton of producing a pound of print cloths. It has been stated that the best mill in the South can produce 38½ inch 64 x 60s at 17 cents a pound, and some others at 20 cents. The average cost in southern mills is said to be around 22½ cents to 24 cents. It is thought doubtful if any mill in Fall River can come within 10 per cent of the top figures of southern costs at this time.

These figures do not take into consideration selling costs, dividends, or depreciation. They include actual labor cost, supplies, and overhead. There are some southern mills located away from the larger centers, equipped with machinery built within ten years, and able because of location to operate longer hours than is possible in New England, where very low costs are obtainable. In a market where competition is seen for a business only ten per cent of that normally available, these low cost mills set the pace and intensify the depression.

The vast reduction in raw cotton has not been as welcome among manufacturers in New England as might be supposed. It is known that the cost of the current crop was abnormally high, perhaps as high as 22½ cents a pound all over the belt. Where the original producer is forced to take a severe loss on his season's work, there is little incentive to prepare for a larger and better crop for another year. New England manufacturers have been anxious for five years to see something accomplished toward rehabilitating the southern farmer, as the western farmer was after the late '90s, so that a better quality may be had from all parts of the cotton growing section. That implies a larger investment in machinery and a much more intense cultivation in those sections where the good cotton can be grown. It is self-evident that a very low price at this time will affect the real interest of the manufacturer adversely, as well as that of the farmer himself.

While the farmer has seen the price of his product declining, the manufacturer has also seen the value of his stock of cotton and cloth running down. The losses on inventories resulting since September, when many of the reports made to stockholders were prepared, have been very severe and have done much toward lessening the interest in the new crop, regardless of what the price may be. The absence of demand for cloths at any price that would warrant a mill in buying cotton, has, of course, been the real reason why many manufacturers have not been picking up some of the very cheap and good cotton that has been offered. The purchasing power of the mill has been reduced by the contraction in the value of its assets.



# EVEREADY

## WELDING AND CUTTING OUTFITS

(*Formerly* Prest-O-Lite *Apparatus*)

## BUILT *for* SERVICE

EVEREADY outfits are especially designed for use in the thousands of metal working plants that need a portable, economical, and moderate priced welding and cutting outfit.

Known for remarkable performance, durability and dependability; Oxweld-built throughout in strict accord with well-established Oxweld standards.

Eveready equipment is a product of experience, of definite knowledge based on a development of oxy-acetylene engineering that has made Oxweld the largest producers of welding and cutting outfits in the world.

EVEREADY apparatus and supplies are for sale in your locality. Use the coupon for full information, new catalog and name and address of your nearest distributor.

OXWELD ACETYLENE COMPANY
(*Eveready Apparatus Dept.*)
3644 JASPER PLACE CHICAGO, ILL.

WORLD'S LARGEST MAKERS OF OXY-ACETYLENE WELDING AND CUTTING OUTFITS

OXWELD ACETYLENE COMPANY
(*Eveready Apparatus Department*)
3644 Jasper Place, Chicago, Ill.

OE-514

Please mail me free of charge your new Eveready Catalog and address of your distributor in my locality.

Name .....

P. O. Address .....

.....

As matters stand today, it seems inevitable to manufacturers that before they again enter upon a period of prosperity, they will be forced to take further losses on actual production. Prices have declined so far below cost that recovery of a permanent character cannot be expected promptly. Owing to the conservative manner in which most New England investments were handled during the wild stock booms of this year, the general opinion is that mills will be able to weather the storm, as a whole. There may be some instances where reorganization may be forced as a consequence of overdoing in the matter of capitalization and the exhaustion of reserves. With money at 8 per cent, there has been no inducement for a mill to borrow for cotton purchases, as it now looks as if the mills will be hard put to it to earn a six per cent dividend on capital without being forced to find more for interest.

There are many varying opinions expressed concerning the duration of the great depression that is now on. The outlook is bound up in the conditions in money markets. Developments of the past two weeks have brought sharply to attention the fact that a large part of the prosperity of recent years came out of the exporting of 12½ per cent of the output of the cotton mills.

It is now known that export conditions are very bad, and in spots even worse than those affecting domestic trade. Goods are congested in many foreign ports and payments are not being made promptly. On the other hand, the necessities of foreign countries to secure all the money they can for their limited products will make them seek this market more than they have this year, when imports of cotton goods have run to the largest yardages ever known. In so far as the foreign trade influences affect the outlook, they are certainly not favorable, and it does not seem now as if they can be improved much before the early part of next year.

Tight money, high rates, and the vast depreciation in the values of stocks of goods on hand in jobbing houses, have done much to cripple the buying power of mill customers. Efforts to assist have been many, notably in the case of selling agents letting out goods to selected customers "on memorandum," the price to be named at some future date. This policy will aid in keeping goods in stock, but it is manifestly a sign of price weakness and the lack of confidence in prices is the underlying difficulty in merchandising.

There are still many evidences in the markets of the effects of cooperation to maintain prices. That delays readjustment and also delays the prospect of an early resumption of buying. Irregularity in values is very marked. While mills have accepted the inevitable and reduced prices promptly, as a rule, jobbers and others were slow to follow, and at the moment, many retailers are liquidating as slowly as they can.

The jobbers will take their inventories December 1, in most cases and it will be possible to draw from their figures some conclusion as to the actual buying power of the trade after the frightful contraction of the past six months. If stock values have been impaired only and capital in stores is intact, buying may be resumed in December or early in January.

On the other hand, if retailers persist in holding up prices and make it clear that their inventory losses next year cannot be covered up, the jobber will find it hard to sell and will not be quick to buy even at the very favorable prices now obtainable in many directions.

It would be erroneous to say that all is gloom in New England, for it is true that several manufacturers have been looking forward for more than a year for just such a trade debacle as that which has been witnessed. These men now contend that the worst is about over and that revival may be looked for soon after the turn of the year. They feel, however, that it will be well into March or April before there will be demand enough in the markets to warrant mills in trying to readjust wages drastically and getting down to a basis of reasonably full operations.

## Export Trade in the Cotton Industry.

BY D. E. DOUTY.

There has never been a time in the industrial development of this country when the need for export trade was so great as it will be during the next ten years, and there may never be another period of American business when the opportunities for gaining a place in the markets of the world are so promising and so attainable.

You may meet in solemn conclave and wearily listen to learned papers on export possibilities; on the purchasing and consuming powers of nations, on the golden opportunities awaiting you across the sea, but there is only one way to have foreign trade—and that is *to go and get it!*

The cotton industry of America needs foreign markets for three reasons:

*First*—To provide an outlet for the surplus production which will result from our recent expansion.

*Second*—To provide a stabilizing influence during periods of national industrial fluctuations.

*Third and Chief*—To manufacture into cotton goods for the world's consumption *all* of the raw cotton grown on American farms. The country that sells its raw materials, forfeits its income and its profits upon the manufacturing operations and sacrifices a powerful means of increasing its national wealth. America should distribute cotton goods to the world in place of raw cotton.

In 1917 and again this year I had the opportunity of spending several months in China and Japan traveling from the south to the north of both countries a number of times and visiting not only the principal cities but many interior points. I wish I had the power to describe the opportunities for American trade in the Orient. It is simply impossible for anyone to convey to you an adequate impression of the possibilities of American commerce with Siberia, Japan, China, Indo China, India and the South Sea Islands.

Much has been said in recent years regarding the opportunities in South and Central America. These countries bear about the same relation to the Orient as regards commercial possibilities as a village in Oklahoma would have to the cities of Chicago, Philadelphia, Boston and New York as a location for establishing a dry-goods business.

There are in the Orient literally hundreds of millions of people buying, wearing and consuming cotton goods. There are, as in our great cities, many very poor people,

*Extracts from an address before the National Association of Cotton Manufacturers.

# Like Mahomet and the Mountain

IT was lots easier to bring Prest-O-Lite and the oxy-acetylene flame to this mammoth wheel than to haul the wheel five miles from a mountain mine to a repair shop.

That's one of the advantages of Prest-O-Lite. Its ready portability makes oxy-acetylene welding possible and remarkably economical *anywhere* and *everywhere.*

And a chain of forty plants and warehouses assure a constant supply of Prest-O-Lite, the Universal Gas with the Universal Service.

All of which means a Nation-Wide Service which you will be interested in knowing all about.

THE PREST-O-LITE COMPANY, Inc.

General Offices, Carbide & Carbon Bldg., 30 E. 42nd St., New York City

KOHL BUILDING, SAN FRANCISCO

*In Canada:* PREST-O-LITE CO. OF CANADA, *Limited*

TORONTO

PW-519

but the Oriental countries possess large financial holdings and wonderful natural resources.

There is a decided awakening in the entire Orient and before the close of the twentieth century the buying power of the people of these great countries is going to be very much increased. There are in China alone nearly 400 million people occupying about one-fifth of the territory. Great areas of China are sparsely inhabited and entirely undeveloped principally because of the lack of transportation. The new commercial policy which is to be based upon the new Consortium will revolutionize trade conditions in China. Transportation systems are to be organized and established, a new financial system will be evolved and the dismembering tendencies of the old system of "spheres of influence" are to be replaced by the establishment of the open door in fact as well as in name.

In the past ten years every business man prominent in our commercial, financial, or industrial affairs who has visited the Orient has returned enthusiastic regarding the possibilities of American trade with those countries. Judge Gary, Mr. Schwab, Mr. Lamont, Mr. Straight, Mr. Stevens and many others are agreed that in the Orient lies America's great opportunity.

In this great opportunity cotton goods stand second only to the engineering materials and machinery necessary to provide her railroads and develop her natural resources. Cotton goods stand next to food supplies in the needs of these great populations, and with a feeling of good will, confidence and gratitude the business men of China are ready to buy from you.

American trade with the Orient is not new. It is simply being revived. In 1778 the first American vessel sailed up the Pearl River and opened trade at Canton in Southern China. In 1825 sixty per cent of China's foreign trade was carried in American ships. In 1917 I crossed and recrossed the Pacific Ocean, called at every port of entry from Hongkong to Port Arthur with the exception of Tientsin, and saw but a single American flag afloat. That flag was on a small river, gun boat, formerly belonging to Spain, at Canton.

This year I could count American flags by the score in Oriental ports. Are we going to keep them there? American ships cannot continue their voyages to foreign ports without American goods as cargo. And (this is no idle play of words), American goods cannot enter the markets of the Orient or any other parts of the world on equal terms with other goods unless they are carried by American ships, distributed by American business organizations, financed by American banks.

The Federal Reserve Act made foreign banking possible to American bankers and they have gone out with courage, as pioneers into strange countries to provide the needs of American business. War-time legislation placed millions of tons of shipping under the American flag and American control, making possible the establishment of American trade routes. We now need the American merchant backed by the American manufacturer who will produce goods, pack them, mark them and ship them according to the needs and wishes of the foreign consumer and in compliance with his specifications.

Our trade with China has quadrupled in the past 15 years, and at present amounts to about 16 per cent of China's foreign trade. This year we stand first in the trade passing through the Port of Shanghai, with Japan second, Britain third, and France fourth.

This trade with China is practically a cash business. By placing your goods through American distributors in China, you can draw against the foreign account as soon as you have your bill-of-lading. There is no question of long time credit as in South America and no 30, 60 or 90 days as with your domestic customer. Quick turnover will be the key to profitable business during the next ten years.

In the world's cotton goods markets, especially in the Orient, England and Japan are to be your chief competitors. You are doubtless aware of the movement towards consolidation of cotton interests which has been in progress in England, publicly for the past two years, privately for perhaps five years. The same thing is now taking place in Japan where even before the war cotton manufacture was dominated by five large companies. It is well known that Germany's great strides in foreign commerce were largely due to effective organization for foreign trade not only of the units of each specific industry but by team work between banking, transporting, manufacturing and merchandising agencies.

There is a grave question whether consolidation within an industry, throwing control into the hands of a few is the best economic policy. But there is no question that the organization of an industry for united action produces economic and commercial strength and is absolutely necessary for meeting world forces in foreign fields.

---

Cooper & Griffin, Inc., the well known Greenville, S. C., cotton firm, has just issued their cotton crop estimate for 1920. They say:

Reports from our correspondents throughout the cotton belt indicate a crop, not including linters, of 12,430,000 bales.

The estimate by states is as follows:

| | |
|---|---|
| North Carolina | 845,000 |
| South Carolina | 1,490,000 |
| Georgia | 1,700,000 |
| Alabama | 705,000 |
| Mississippi | 850,000 |
| Louisiana | 375,000 |
| Texas | 3,850,000 |
| Arkansas | 1,030,000 |
| Oklahoma | 1,020,000 |
| Tennessee | 335,000 |
| All others | 230,000 |
| Total | 12,430,000 |

In the foregoing figures due consideration has been given to the amount of cotton in the fields, unopened, at the time of killing frost; to the abandonment of acreage due to the high cost of picking and the low price of cotton. It is our conviction that the figures given will very closely approximate the final outturn.

---

In accordance with its regular custom, the Whitin Machine Works, Whitinsville, Mass., manufacturers of textile machinery, are sending out their attractive wall calendar to their customers and friends for use in 1921. The usual convenient form is retained this year, and views of the Whitin plant and its products are shown.

# Notes About Men You Know.

ALLEN F. JOHNSON, vice-president and general manager of the Consolidated Textile Corporation, will move his headquarters from Greensboro, N. C., to New York City, on January 1, 1921, according to an announcement made in Greensboro. In his new location, Mr. Johnson, as vice-president in charge of operation, will control the operation of all the properties of the corporation, amounting to nearly 800,000 spindles. The Consolidated Textile Corporation recently acquired from F. K. Rupprecht and associates the B. B. & R. Knight properties, which include one of the largest groups of mills in the East. Mr. Johnson will have charge of the operation of these plants, as well as that of the various southern mills operated by the corporation.

YATES SMITH, auditor, will be in charge of the southern office of the Consolidated Textile Corporation, which will be continued at Greensboro, N. C. Mr. Smith was formerly secretary of the Beaumont Mills, Spartanburg, S. C.

JOHN B. CLEVELAND, for 25 years president of the Whitney Manufacturing Co., Whitney, S. C., recently resigned that position and W. E. Winchester, who has been treasurer of the organization, was elected president to succeed him. Superintendent A. S. Thomas was elected treasurer, which position he will assume in addition to his other duties.

JOHN D. ROSE, secretary of the Henderson (N. C.) Cotton Mills, died recently of heart trouble.

THOMAS A. DRAKE has resigned as superintendent of the Egan (Ga.) Mills.

JAMES A. SOUTH has resigned as spinning foreman at the Couch Mills, East Point, Ga.

J. M. DAVIS, from Thomaston, Ga., has been placed in charge of carding and spinning at the plant of the L. H. Gilmer Co., at Millen, Ga.

E. F. WOODSIDE has been named president of the Easley Cotton Mills, which were recently acquired by the Woodside interests of Greenville, S. C. Other officers named include: John T. Woodside, vice-president and secretary; J. D. Woodside, vice-president and treasurer, and George Brownlee, assistant treasurer.

BEN P. WOODSIDE, who has been purchasing agent for the Woodside Cotton Mills Company, was appointed manager of Easley Mill No. 1.

S. T. MCKITTRICK, who has been connected with the Woodside Cotton Mills Company for a number of years, was named manager of Easley Mills No. 1 and No. 2, at Liberty, S. C.

FRANK B. WILLIAMS, president of I. B. Williams and Sons, Dover, N. H., died on Sunday, October 31.

WILLIAM A. LEE is president of the recently organized Augusta Mill Supply Company, 429 Jackson St., Augusta, Ga., dealers in general mill supplies and machinery. He is also president of the Southern Press Cloth Manufacturing Co., and is president of the Board of Commerce. He is a former president of the Augusta Rotary Club. G. M. Carl, the secretary and general manager of the company, was connected with the Lombard Iron Works, Augusta, for many years, in the capacity of assistant to the general manager.

C. B. MERRELL, who has been for a number of years in the general offices of the Economy Fuse & Manufacturing Company, has been appointed district sales manager of the Philadelphia office, 523 Widener Building, succeeding E. J. Watson, resigned.

J. E. BYERS has resigned as overseer of carding and spinning at the McLain Manufacturing Co., Bessemer City, N. C. D. O. Carpenter has succeeded Mr. Byers.

R. JACKSON, formerly at the Cora Mills, Kings Mountain, N. C., has accepted the position as overseer of spinning at the Kings Mountain Manufacturing Company.

G. R. COLLINS has resigned as spinning foreman at the Henrietta (N. C.) Mills.

ROBERT WILSON has resigned as spinning foreman at the Swift Manufacturing Co., Columbus, Ga.

M. C. MARTIN, formerly of Red Springs, N. C., has accepted the position of general foreman of spinning, spooling, twisting and winding at the Springfield Cotton Mills, Laurel Hill, N. C.

J. T. JORDAN, formerly of Athens, Ga., and Jefferson, Ga., is now general superintendent of the group of mills including the Mecklenburg Mill, Charlotte, N. C.; the Clyde Mill, Newton, N. C.; and the Nancy Cotton Mills, Tuckerton, N. C.

ROBERT L. FREEMAN, of Newnan, Ga., was recently elected president of the Newnan (Ga.) Cotton Mills to succeed the late M. F. Cole, whose death occurred a short time ago.

T. R. MORTON has resigned as superintendent of the Henry River (N. C.) Manufacturing Company to become efficiency expert for the Miller Cotton Mills, Waco, Texas.

R. L. WEST has resigned as carding and spinning foreman at the Henry River (N. C.) Manufacturing Co.

GUS V. TALLANT has resigned as spinning foreman at the Danville Knitting Mills, Bon Air, Ala.

FRANK WARE has resigned the position of spinning foreman at the Hampton (Ga.) Cotton Mills No. 1.

J. C. SAUNDERS, formerly general manager of the Bonham (Texas) Cotton Mills, has resigned to become manager of the Gonzales (Texas) Cotton Mills, to succeed E. M. Sweeney, resigned.

F. S. FOO, who recently arrived in this country from China and who was a visitor at the Fourth Southern Textile Exposition, has entered the North Carolina Textile School as a regular student in textile chemistry and dyeing. This textile school, which is a department of the North Carolina State College, Raleigh, N. C., has an enrollment of one hundred and sixty students who are taking full courses in cotton manufacturing, textile engineering and textile chemistry and dyeing.

C. L. BRADLEY has changed from spinning and twisting foreman at the Forsyth (Ga.) Cotton Mill, to general foreman of spinning, spooling and twisting at the Willingham Cotton Mills, Macon, Ga.

R. B. BROWN has resigned the position of foreman of spinning at the Gainesville Cotton Mills, Gainesville, Ga., after two years service. Mr. Brown was for seven years overseer of spinning at the Brandon Mills, Greenville, S. C.

# Time was when you liked to take

a chance on a lucky packet, but you do not use that method in business.

# Warren Soap and Warren Service

combine the accumulated experience of a large part of the textile trade during fifty years with the most up-to-date scientific investigation.

**The Warren Soap Manufacturing Co.**

**77 Summer Street, BOSTON, MASS.**

**Established 1870** **Incorporated 1890**

STRAIGHT LINE METHODS

# The Law of Credit

## Your Facts and Your Figures

Credit is the expression of trust—the belief in a man's *ability* to meet his financial obligations. In business, as in all human relations, trust is the inspiration to large accomplishments.

To a merchant, credit is largely a matter of rating and collections. But to the Banker, in the financing of business, credit *must* be an *exact* science. Only on facts, deducted from, and supported by, figures may the Banker safely extend the credit desired—safely for your welfare, safely for his own.

*Safety,* these days, is the new law of business preservation. The Banker is the judge. In extending credit he must follow conservative as well as constructive policies. Your facts and your figures are his guides—his only laws.

Are you able to present them—clearly, fully? You cannot avoid facts and figures. They are vital to your business, protective and constructive.

Thru monthly Balance Sheets, Operating Statements and, above all, thru a well-planned Business Budget, showing close observance and frequent checking, *you* make the laws which your Banker *must* obey in the granting of credit.

*In this connection, the*

## Straight Line Methods

OF

## ERNST & ERNST

offer a superior service. They are applied to your particular business by trained experts—men thoroughly versed in the principles of Accounting and Cost Finding, with long experience in many and varied lines of business, nation-wide in scope. They are operative individually and collectively in 25 cities.

ERNST & ERNST

AUDITS - SYSTEMS

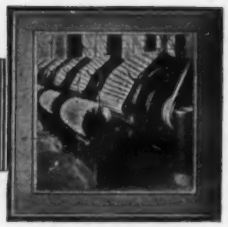
TAX SERVICE

| | | | | |
|---|---|---|---|---|
| NEW YORK | CHICAGO | CLEVELAND | CINCINNATI | NEW ORLEANS |
| PHILADELPHIA | MINNEAPOLIS | BUFFALO | INDIANAPOLIS | DALLAS |
| BOSTON | ST. PAUL | PITTSBURGH | TOLEDO | FORT WORTH |
| PROVIDENCE | ST. LOUIS | DETROIT | ATLANTA | HOUSTON |
| WASHINGTON | KANSAS CITY | GRAND RAPIDS | RICHMOND | DENVER |

STRAIGHT LINE METHODS

# How Other Men Manage

## Practical Discussions by Cotton's Readers on all varieties of Mill Subjects



### The Action of the Bale Breaker.

EDITOR COTTON:

I shall endeavor, through a series of brief articles, to explain in this department my ideas regarding the elimination of the obstacles that confront the average foreman in a cotton mill.

The basis of this great industry is, as we all understand, the preserving of the strength of the cotton fiber, or rather retaining the strength that gets its origin according to the type of cultivation received. One might ask, how can a foreman preserve strength which in some cotton has been withheld by nature yet which is so essential in the manufacture of yarn or cloth? I will say in passing that no one, to my knowledge, has as yet improved on this wonderful nature of ours, so we must be patient with that which is given us and adjust and prepare for the weak and then it will be easy to find an exactness for the stronger grades.

The average American cotton comes to the opening rooms in bales of 500 pounds and, in most cases, matted and pressed in such form that rarely do we find a mill where it can be truthfully said that the cotton is actually opened properly. One has but to step to most any card and place his finger on the feed roll lever and determine the vibration there caused by the bunches left in the web of cotton—the lap—that is passing between the roll and feed plate to see that these matted and pressed bunches are still prevalent.

The question might arise, How is it possible for the matted condition to remain in the web when we have such perfection in openers and breaker pickers? In answer I will endeavor to explain that the unevenness of our yarns today is the direct result of this very question of matted cotton.

We all can remember that a while back the bulk of the opening was carried on by hand. The bales were arranged on the floor, opened, stripped of their hoops and sacks, then thin layers were taken out and scattered evenly over the surface of the master pile of cotton, which gave the perfect blend of color fibers and a uniform condition as regarded strength, this strength, in all cases, being determined only by the strength of the grades used. It would be useless to enter into a description of the procedure in this method of hand blending and opening, but I wanted to get a picture of the huge pile of cotton, in order to differentiate between what has been the practice and what is the practice today. This will give me a foundation.

The modern opening machine or bale breaker is sold to mills and made to fill its contract completely by turning out a tremendous production. Then again, the average operatives of these openers are men, or more often boys, who haven't the time that should be given an operative on such a job. Time is limited to enough to keep the hopper filled so that the machine may produce its maximum capacity. We often find the operative lifting great layers of cotton from the nearest bales and throwing them upon a traveling lattice or directly into the hopper. These layers seem in some cases to be large enough to break the slender slats of the traveling apron both in the hopper and in the one leading up to it. These large pieces begin their journey by forming themselves into a large ball, being carried forward by the bottom apron until they come in contact with the spiked or upright apron. The motion of the bottom apron against the motion of the spiked apron causes the cotton to roll and to continue to roll until sometimes one would think the spiked apron would never get its opportunity to tear the cotton into pieces.

This tumbling is, to my mind, the very first obstacle in the path of even, strong yarn, because by careful observation one can readily see that fully one-half of the spiked apron is entirely without cotton on its surface while the remaining half of its surface is carrying small mats or wads of cotton that lay flat on its surface and instead of being thrown back to the hopper, these mats or wads must be allowed to proceed by the spiked roll in order that the production of the machine may be maintained.

Thus, with an idea of the construction of the average opener, one can very readily see that if the upright apron was made to fill its surface the revolutions or the speed of that apron could be greatly reduced and still hold the production required of it, at the same time removing the tendency to injure the fibers by ripping them from the tumbling rolls in the hopper. What do other readers think?

A. B. C. (R. I.)

**We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular sytle and will be properaly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.**

---

The Westinghouse Electric & Manufacturing Company has issued Leaflet 1910 which describes and illustrates the electric drive for cotton openers and pickers. The different methods of drive are given with a table for calculating the size of motor for group drive. Motors and starting apparatus for this equipment is also described and illustrated.

## Cutting Labor Costs per Pound.

EDITOR COTTON:

If there ever was a time when cotton mill men should begin house-cleaning that time is now. The approaching battle for orders will prove that the mill which not only has the most modern equipment to produce quality, but above all has trimmed its forces to a skillful fighting unit, will land the business.

During the war it was natural for every superintendent to employ anyone asking for a job, regardless of whether they were one-armed, half-brained, or otherwise incapacitated for efficient work. This was but natural during those times when production at any cost was the cry. However, the present period of industrial stagnation presents new problems of lowering the cost of production to the utmost of our ability and it is an opportune time to prepare for the bustling business of readjusted prices and the revival of open competition.

Any superintendent will admit that he has retained in his employ operatives who either from laziness or physical inability are not rendering value received for their wages. Furthermore, any superintendent who keeps such operatives in his employ is inviting disaster to the mill he directs, for it will not be able to compete with other mills in the sale of its goods.

The remedy is quite simple. Take your mill department by department, list the machinery with the maximum and minimum number of operatives required for operation and require your overseers to keep in the limits specified. Eliminate unnecessary jobs or combine the less important jobs. Experiment a day or two with certain arrangements of help whereby one or two are dispensed with and you will be surprised to see production flow just as steadily as before. See that every hand has definite duties which keep him employed the full time of operation. If necessary, promptly discharge anyone, regardless of position, who is unwilling to cooperate in getting higher efficiency. This is the only salvation against sure failure. It will not be easy but it will certainly be necessary.

Having gotten your help organized, it will be necessary to see that the machinery they operate is also in the best possible condition.

Most superintendents know that it is necessary to have every spindle and shaft properly plumbed and leveled, but overlook further important matters. If your mill is engine driven and the machinery operated from countershafts, it is quite likely that the belts will need a thorough overhauling. The slippage can be determined by computing the theoretical speed of shafts by the ratio between the diameter of the pulleys. The actual speed being obtained by a speed indicator, divide the difference between the actual and the theoretical speed by the theoretical speed and the per cent slip is calculated. This should not exceed four per cent and if possible, should be reduced to two per cent. The belt, however, should not be so tight as to cause excessive heatings of the bearings, and if it is necessary to tighten up to reduce slippage to this extent, the probability is that the belt is overloaded. A wider belt will solve this trouble.

In the event that you have electric motors, either individual or group drive it may be necessary for you to consult an engineer or a factory representative to test their efficiency or their adaptability for the purpose. Motors should not be overloaded and if the load they pull has little variation, they should not be underloaded to obtain the highest efficiency. A polyphase, squirrel-cage motor, which is the usual installation, is a highly efficient machine. While from a mechanical standpoint, it is the acme of simplicity, yet if it is neglected, it will cost considerable money and loss of production. The bearings should be regularly oiled and its windings thoroughly blown clear of dust and lint every few days.

The individual, electrical, chain or direct connected motor is undoubtedly the most efficient form of motive power yet devised. However, the first cost is the highest and the complication of electrical equipment sometimes counteracts the saving in power from the standpoint of an investment.

New equipment at this time will hardly be considered and it will probably be up to most of us to make the equipment already installed operate at the highest efficiency. To this end we must bend our every effort, if we are going to stay in business. H. A. M. (Georgia.)

## Watch the Drawing Frames.

EDITOR COTTON:

Much has been said and written about uneven yarn and roving, and in most cases, this trouble is laid to the carding, which is quite proper. It is impossible to make a perfect strand with the present system of carding because of the prevalence of carelessness. In the days of the railway-head system, it will be remembered that the cans were painted different colors. This was done so that no two sliver from the same railway-head would be run in the same delivery. It was a good point, and made the yarn much evener and stronger.

At present, it is a practice in many mills to have all full cans put up at the drawing, not only at the breaker drawing, but on the coarse and fine also. This is done so that the drawing tender will be able to run more frames. With this system some drawing tenders run as many as ten frames.

If there is a practice in a cotton mill that will make the yarn more uneven than this one will, I don't know about it. To prove that this is true, the following tests may be made: (1) Size the drawing sliver from all full cans at the back; (2) size when the cans are one-half full; and (3) size when the cans are nearly empty. Here note the difference in the weight of the sliver from the full and the nearly empty cans. Next make a similar test with the cans at the back, 1/6 in. difference. That is one can full, the next 1/6 less and so on. In the second test the same condition will prevail as when the cans were painted in the old system of carding, and there will be the same degree of variation.

Do not allow the drawing tender to take all cans from the breaker drawings, but one at a time instead. This method will preclude the possibility of having all full cans at the next process. This small saving on the drawing frames is the cause of a great deal of the uneven yarn found in cotton mills. I hope some of the readers will make the tests I have given and tell us what they find.

Williams (Conn.)

Your Money's Idle Hours

BECAUSE of the increased burden which war and resulting economic disarrangements have placed upon the dollar quicker turn-over of working capital is a most important factor in the financing of every business.

Payment of higher interest rates will not always secure funds. In a situtation where larger amounts are required for handling individual transactions and restriction of loans may be necessary to provide for essential activities, "*side-tracked credits*" are doubly undesirable.

A measure of relief comes when deliveries and collections are speeded up by reducing delays which even under normal conditions are often allowed to clog the processes of trade. To this relief, the Irving contributes by direct collections everywhere in America and by tracing shipments, notifying consignees of arrivals and presenting drafts by messenger daily in all parts of Manhattan. The *straight line to results* is the unfailing rule of Irving specialized service.

IRVING NATIONAL BANK
WOOLWORTH BUILDING, NEW YORK

## The Requisites of a Good Foreman.

EDITOR COTTON:

I will try in this letter, in my own way, to give what I consider to be the most important requisites in the making of a good and successful foreman.

First, he should be a clean man morally, and so much the better if he is a Christian man.

He must know the different machines in his room from the sweeping on up to the last process of manufacture in his department and he ought by all means know something about each department in the mill.

He should be a student of human nature, quick to see, quick to think, quick to act, but slow to talk about most of his business. He should stand for justice and a square deal to his company by the help and a square deal to his help by the company. He should know every operative personally, know where they live and some of their relatives, know about their home surroundings, whether or not they are satisfactory, about their troubles and should sympathize with them in their sorrows. Meet with them in their churches and Sunday schools, in their social games and plays. Know them on the streets and in the city away from home just like he knows them in the mill.

A successful department head should have rules, not many but a few; not written out on paper and posted around on the walls, posts or in especially made frames, no, not that, but he should tell them personally to his help and explain to them why it is necessary to have these rules. He should weigh an order carefully before giving it and should then stand by that order and live up to it regardless of the outcome. There are very few people in this world who are not submissive to the right kind of treatment. When a set of operatives find out the foreman is going to treat them right, at the same time being a foreman and having things done his way, they will give very little trouble.

A foreman should realize that his operatives are human just the same as he is, that they have their likes and dislikes just the same as he does, that there are times when they want to be off for a day or so just the same as he does, and that they don't like to be lectured to and told how "no 'count" they are when they go down and ask off any more than he would want to be treated that way by the superintendent when he asks off. Right here I want to say that if department heads would use better judgment about letting their help off they would not have so many layouts. I make it a rule that if an operative comes to the mill and asks for a day off, to let him off unless I can, in a satisfactory way, get him to wait until the next day. Let them off even if you have to stop their work for a day, it will pay in the long run. If you have a regular loafer or dead beat, have him arrested for vagrancy and put on the chain gang; that will make your good help think more of you. One "bucking timber" is about all you will have to handle this way, the rest of his kind will either go to work or leave town.

Above all things, a good foreman must have discipline and system about doing things. Ninety per cent of the cotton mill help or of any other type of workers know when their foreman knows his business and is onto his job. If they find he means business and means to have things

"COAL TO DYESTUFF"

# NEWPORT COLORS

## Vat Dyes

**Newport Anthrene Dark Blue B O Paste**
**Newport Anthrene Brown B B Paste**
**Newport Anthrene Green B Paste**
**Newport Anthrene Blue G C D Paste**
**Newport Anthrene Black Paste**

These are all now available as pastes and correspond in other respects to Indanthrene colors of the same designation.

Others which will be ready in the next few weeks are

**Newport Anthrene Yellow G Paste**
**Newport Anthrene Blue G C Paste**
**Newport Anthrene Blue R S Paste**

When you see our slogan, remember what it means:

"COAL TO DYESTUFF"—
NEWPORT ALL THE WAY

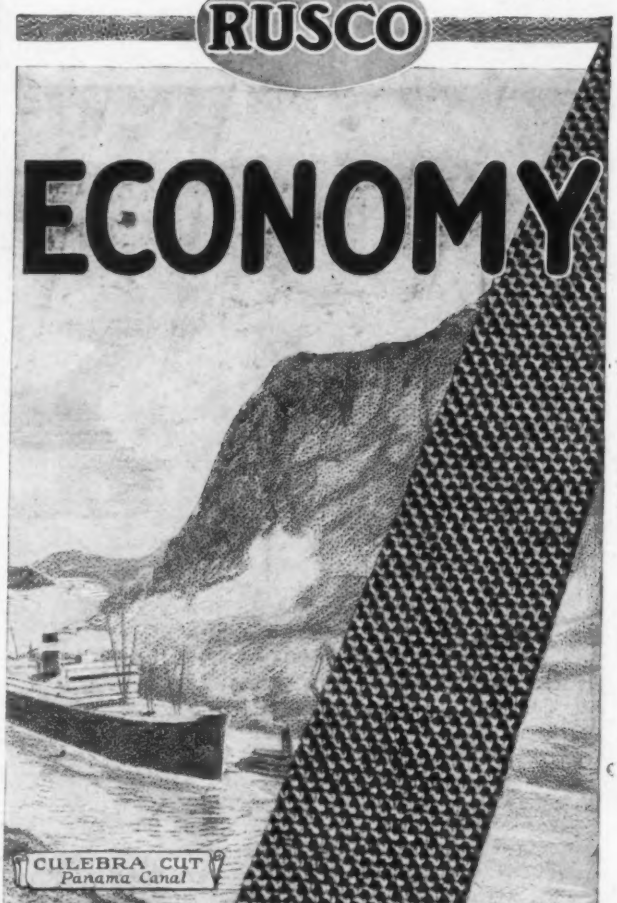
**Newport Chemical Works, Inc.**
Delaware Corporation
**Passaic, New Jersey**

BRANCH SALES OFFICES
BOSTON, MASS. PHILADELPHIA, PA.
PROVIDENCE, R. I. CHICAGO, ILL.
GREENSBORO, N. C.



RUSCO

# ECONOMY




**RUSCO**
**Solid Woven**
**BELTING**

Are your belts an asset or a liability? An increasing number of manufacturers are finding the way to factory economy by installing Rusco Belting—it costs less per year. Used for Power, Conveyor, Polishing and Endless Belts. Our nearest office will gladly tell you how Rusco Belts can best be used in your plant.

**The Russell Manufacturing Co.**
**526 Russell Avenue, Middletown, Conn.**
Branch Offices:
New York, 349 Broadway
Chicago, 1438 Michigan Ave.
Atlanta, 608 S. Forsyth St.
Detroit, 226 Jefferson Ave., E.

done right they will give him very little trouble. On the other hand, if he is not earnest and firm in his actions, he will have a hard time. A foreman should never show any signs of anger. He should never get grouchy or "take the pouts," never have the blues and come before his help like all his kin were dead. If he can't help getting that way at times, he should get off and go away until he gets over it. He should be cheerful always, with a smile, a "Good morning, how-de-do" for every one with whom he comes in contact, the little sweeper and negro scrubber as well as the pretty girls.

A foreman should be normal. I mean by that he should not try to get above his "raising" or his equals. He should remember that he was one time at the bottom on an ordinary job just as his help are now. Why, judging by the actions and attitudes of some foreman I know, you would think they were born with a silver spoon in their mouth and had never known what work was! To be a successful foreman a man must be himself, in other words, be "one of the boys" in everything that is right. Do everything possible to make the work run good and be quick to adjust any complaint that is made. He should let his help know that he is interested in them and their welfare, when they see this they will be interested in his welfare and the foreman and his help will be one big body of people cooperating with each other for their own and for the company's interest. Georgia Cracker. (S. C.)

## Making Clean Yarn.

EDITOR COTTON:

At this writing yarn merchants are very fussy about quality. It was not so very long ago that it was quantity they wanted. However, I find that many foremen in charge of spooling and winding are having trouble because they are called on to close the guide plates. This is written to prove that it is not possible, in every case, to close the guide plates to suit the diameter of the yarn.

Many superintendents are unreasonable in that they require the carder to make a heavy hank roving, thus making a long draft on the spinning frame which is sure to result in the production of yarn full of thin and heavy places. If the guide plates are set to suit the diameter of the yarn, these heavy places are unable to stand the friction, for two reasons; there is less twist in the heavy portions, and owing to lack of twist and an increase in diameter the heavy portion will pull apart, thus making spooling a difficult operation which causes much dissatisfaction among the tenders.

To prove this point, let us take into consideration a well known frictional yarn cleaner. This device will clean the yarn, but as in the case of the guide plate, the yarn will break at every defective place, and for the same reason as stated. There is only one successful way in which the guide plates can be closed to suit the diameter of the yarn, and that is by removing as much work as possible from the front top leather roll on the ring spinning or mule by making a very light sliver and hank roving. This is necessary also when using the yarn cleaner. If clean yarn is wanted, the carding must be reduced and not increased. It is the law of compensation, you must pay either in the card room or in the spooling. Wash. (Conn.)

## A Hank Check List for the Carder.

EDITOR COTTON:

A very important check list for any mill is the roving hank check list for the carding department. It prevents mistakes, discovers when hank clocks are not working properly, and also is a check on any dishonest effort on every machine; it also aids in making up the time or payroll for the entire department.

Many mills have a weekly hank clock list, and follow it up closely. The accompanying form is the one usually adopted and which answers the purpose.

This list answers another purpose not already mentioned. It provides a running record of the product of each machine. And whenever a clock is found to be out of order, it is only necessary to look up the record and the previous average may be taken as the amount of product which the machine produced and which the clock would have recorded if it had been working properly. This method of settlement is always satisfactory to the attendant as it has the equity behind it which gives the operative a square deal.

HANK CHECK LIST

MILL NO..... WEEK ENDG.....

CARD ROOM NO....

| ROVING FRAMES | CLOCK RECORD LAST WK. | CLOCK RECORD THIS WK. | TOTAL HANKS FOR THIS WK. | REMARKS |
|---|---|---|---|---|
| SLUBBERS NOS. 1 2 | | | | |
| TOTAL | | | | |
| FIRST INTER. NOS. 1 2 3 4 | | | | |
| TOTAL | | | | |
| SECOND INTER. NOS. 1 2 3 4 5 6 7 8 | | | | |
| TOTAL | | | | |
| JACKS NOS. 1 2 3 4 5 ETC. | | | | |
| TOTAL | | | | |

On the form shown, there is a column devoted to "remarks." If a clock is found to be out of order, note is made of this in that column. The fact that this note is made also provides the information as to whether or not the hank clock is promptly fixed. The rule is to have the clock repaired before another weekly hank record is reported, or the reason must be stated as to why it has not been fixed.

Mills not providing this weekly record are short of information. Mistakes are harder to rectify. Hank clocks

# Employers Liability

# Insurance At Cost

The MILLERS INDEMNITY UNDERWRITERS saved Southern Textile Mills twenty-seven per cent. of their liability insurance premiums for the years 1918 and 1919.

We specialize in class insurance, which is the real answer to INSURANCE AT COST.

Our service is of a personal nature, and through our Atlanta Office we are specially equipped to care for the needs of the Georgia Mills.

## MILLERS INDEMNITY UNDERWRITERS

**BAILEY & COLLINS, Managers**

**201-202 Walton Building**

**ATLANTA, GEORGIA**

**Greenville** **Dallas** **New Orleans**

are likely to remain out of order a longer time. And there is more chance for dishonesty all around.

In a very large mill a separate form may be used for each kind of roving frame.

Another important matter which this record shows up is whether or not the production on each frame is uniform on the same hank and the same stock. If a certain frame falls behind, the average record shows up against that frame and the matter may be looked up and the cause of the shortage removed as far as possible.

On the whole no mill can afford to be without a good roving hank checking list which is faithfully followed up.

H. D. Martin (R. I.)

## Continue Social Service.

EDITOR COTTON:

We have entered the period of reconstruction, which is the sequel of all conflicts, and although no man can predict its duration, still we should all look forward to a speedy return to normal conditions.

During the war period, many concessions were granted to the laboring class, which stimulated them to better production. The favors granted them were small, in themselves, but the quantity of them had a marked effect. So it will be well for us not to lose sight of these minor improvements in the dazzle of great reconstruction problems.

Perhaps it will be well to look back and see what our different cotton mills have done in the last few years and then we can realize what is needed in the future. Some of our mills stimulated athletic interest among their operatives by forming baseball teams, and providing a field and uniforms for the players. There is no doubt that a corporation baseball team is a great asset to a mill, provided the players are taken from the mill and not hired to play, as is sometimes the case. The help will turn out on a Saturday afternoon to see their co-workers play, and get so excited over the game that they will forget the troubles promoted by agitators, and return to work invigorated and happy instead of coming in drowsy and grouchy after a moonshine spree or an afternoon spent trying to get drunk on one-half of one per cent.

Another important idea was the selling of Liberty Bonds to the help and although this opportunity is now passed, still thrift can be instilled in the minds of our working people by advocating the purchase of thrift stamps. By buying a few each week a man soon has enough to exchange for a war-savings stamp which matures in five years, paying good interest. People purchased Liberty Bonds because they believed it was necessary and now they should be taught to buy thrift stamps and thus save the money they have previously wasted thoughtlessly.

It is now approaching the holiday season when everyone should enjoy a good dinner. A corporation as large as the average cotton mill is able to buy turkeys at wholesale prices and thus enable all its workmen to obtain turkeys at a price favorable to them. The labor of keeping track of this transaction is negligible, because the mill always has someone around the office who can handle such a proposition satisfactorily.

We should now look at the tenement question. The war enabled some mills to pile up large surpluses, and now the question arises as to how this money shall be disposed of. You will have to spend it anyway, so you may just as well put it into an improvement which will benefit the help. If you have a mill village, beautify it and make the tenements comfortable; if you haven't a mill village, then build one, and let it be one of which you will be proud in future years.

The question of providing farms for the help is more or less a local one. If there is a lot of good land around the mill that is not in use, the mill would be well rewarded if it assigned lots of it to any of the men who are agriculturally inclined.

In some centers the mill restaurant seems to meet with favor, but there are many mills where such a thing could not exist on account of local conditions. Their operatives have yet to be educated to this idea. But when you see them warming their dinners on the steam pipes around the rooms, it should occur to you that they would appreciate having a steam table in one corner of the room where they could set their coffee at 11:45 and have it warm at dinner time, instead of having to balance it on a steam pipe.

The smoking room idea is a new one in cotton mills, but for some mills it is a very good scheme. On a cold or stormy day a man hates to stand outdoors for a smoke, and the boiler room stretches out a tempting hand to him. But his smoke there tastes to him like yours used to when you were a kid at the swimming hole and you were afraid your father would catch you. A small fire-proof smoking room is not very expensive and it gives a great deal of pleasure to the men each day.

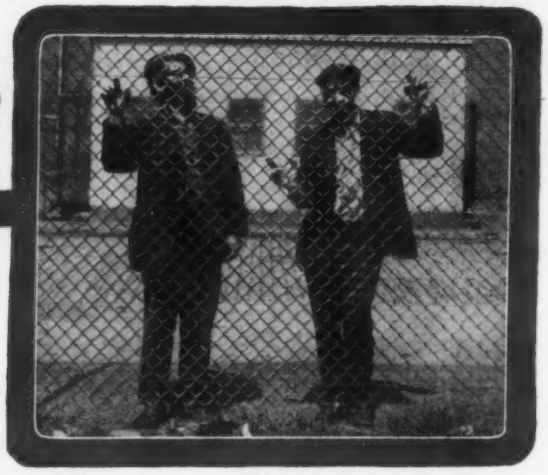
We now come to the washing of clothes. The great majority carry overalls and aprons home to be washed, but sometimes we see an ambitious Portugese washing in the sink during noon hour. Why not broaden out and give all a convenient wash room where they can go and wash their clothes instead of carrying them back and forth over the road? Or, better still, install a mill laundry for the operatives' use.

All these features are assets to a mill and they do not cost very much. The mill that thinks of its people's welfare will not have as many difficulties when reductions in wages become necessary as the one that looks at the almighty dollar instead of at its help. M. W. H. (Mass.)

---

The 1920 edition of the American Directory of the Knitting Trade has been issued and is now ready for distribution. In this edition are reported a number of new knit goods organizations which were started since the previous edition. This publication lists, geographically, practically every knitting mill in the country and gives a full report on each including the names of officers, kind of product, number of machines, kind of power, selling agent, kind and sizes of yarn bought, and whether the mill dyes, bleaches or finishes. In addition to the mill section there is a classified directory which includes manufacturers, selling agents, exporters, jobbers and wholesalers, finishers and printers who make a specialty of knit goods work, knitting yarn manufacturers and buyers, etc. A feature of the Directory is its maps of the various mill districts. These are so indexed that any town may be found quickly. The directory is published annually in a handy size for the pocket. The present edition marks the 38th year of publication. The publishers are the Bragdon, Lord & Nagle Co., New York City.

# Which side of *your* FENCE do you want them?



INSIDE OR OUTSIDE—kept out by an *unclimbable* chain link factory fence? Six, seven, or eight feet high, topped with barbed wire. . . .

FAITHFUL—because made for continuous service, in winter and summer, the Anchor Post Chain Link Factory Fences prevent unwelcome trespass. Rust cannot attack them because every part, *exposed or unexposed*, is galvanized by the hot-dip process. Frost and thaws cannot loosen their foundations, for each of these is a strong, rigid steel anchorage, deep in the ground.

***Our nearest branch office is prepared to give you full information and all assistance in fence plan and construction. Let them get in touch with you today—or write to our main office for one of the catalogs.***

## Anchor Post Iron Works

**167 Broadway, New York, N. Y.**

Boston, 79 Milk St.
Hartford, 902 Main St.
Greenville, S. C. Palmetto Bldg.
Chicago, 8 So. Dearborn St.
Philadelphia, Real Estate Trust Bldg.
Cleveland, Guardian Bldg.
Pittsburgh, Pa., Jenkins Arcade

2307-G

# Anchor Post Fences

## Three Knitting Questions.

EDITOR COTTON:

I shall be glad to see in the columns of your Practical Discussion Department any answers to the following questions:

(1) What makes streaks or wide lines in a fine seamless hose?

(2) On a rib frame using two threads or double feed, with revolving stop motion, what makes the stitch in the fabric seem irregular?

(3) What makes a rib frame, especially of fine gauge, cut holes in the fabric, sometimes one to two holes to a top?

T. R. E. (Ill.)

EDITOR COTTON:

In replying to the three questions of "T. R. E.", I will take these questions up in the order they are given.

(1). Tight slots in the needle cylinder or dial will cause streaks in the fabric. To remedy this, keep the needle cylinder as clean as possible at all times and keep needles in line. Also look out for points of sinkers being bent, sometimes pieces of dirt get behind the needle and extend it forward.

(2) To prevent an irregular stitch in the fabric on a rib frame using two threads or double feed, with revolving stop motion, see that the cones of yarn are of about equal size at all times. Also see that the cylinder stitch cams are both pulling even. To do this, mark with black oil each thread, evenly above the cone and notice that each thread enters the needle about the same time.

(3) When there are holes cut in the fabric on a rib frame, "T. R. E." should first of all, examine the needles in the cylinder and dial and see that there are no rough or sharp rivets and no stiff latches. Have the slots in the cylinder and dial working free and clean, see that there is no pull on the yarn and that the hole in the yarn carrier is smooth. Do not have the web take-up too tight, but just strong enough to draw the fabric down so that it will not strain the needles or load up. Set the drawing-in cam on the dial needles just enough to cast off the stitch and not stitches.

Bob (Iowa).

---

A comprehensive booklet on belting has been issued by the Graton & Knight Mfg. Co., Worcester, Mass., under the title "Standardized Leather Belting for Power Transmission." This booklet, which is quite in line with the progressive methods of this well known company, is known as their bulletin No. 101. It tells, in a foreword, of the steady continued growth this company has experienced since its inception in 1851, and gives a complete list of the products now manufactured by this organization. Taking up the question of standardization, the booklet tells of the application of efficient methods in the manufacture of leather by this company. A valuable section of the brochure is that devoted to the application of the G. & K. belting to various industrial uses. Here each specific industry is dealt with separately and in each case recommendations are made as to the proper belt to use under different conditions to secure maximum efficiency and economy of transmission. This information is given for the machines in each process in the industry being treated. This booklet contains 96 pages, is printed on coated stock and is bound in an attractive, durable paper cover.

## Analysis for Materials Used.

EDITOR COTTON:

When stockings weighing 22 ozs. per dozen pairs are made up of a 36's cotton and a 36's worsted, what are the percentages of cotton and wool in the goods and what weights of cotton and wool are present in a dozen pairs of stockings?

W. (Mass.)

---

EDITOR COTTON:

If we consider, in "W's" question, that the number of yards used of each yarn is the same, we may make the following comparison. Since each yarn has 36 hanks per pound, the cotton will have $36 \times 840$ yards per pound and the worsted will have $36 \times 560$ yards per pound, or the cotton will have 30,240 yards per pound, whereas the worsted has only 20,160 yards per pound.

Consequently, one yard of cotton yarns weighs $\frac{1}{30240}$ of a pound and one yard of worsted weighs $\frac{1}{20160}$ of a pound. Each pound has 7000 grains, so we can say that one yard of cotton yarn weighs $\frac{7000}{30240}$ or .231 grains and that one yard of worsted weighs $\frac{7000}{20160}$ or .3475 grains.

If one yard of cotton weighs..... .231 grains
and one yard of worsted weighs .. .3475 grains

one yard of the two together weighs .5785 grains

Of this .5785 of a grain, .231 of a grain are cotton or $\frac{.231}{.5785}$ of the whole is cotton. This fraction reduced to per cent is forty per cent. The remaining .3475 of a grain are worsted and are $\frac{.3475}{.5785}$ of the weight of the whole. This fraction reduced to per cent is sixty per cent.

This hosiery is then composed of forty per cent cotton and sixty per cent worsted. For each dozen pairs weighing 22 ozs., forty per cent of the weight or 8.8 oz. is cotton and sixty per cent of the weight or 13.2 oz. is worsted.

The mathematical part of this answer is collected alone below.

$\frac{7000}{840 \times 36} = .231$ grains per yard cotton.

$\frac{7000}{560 \times 36} = .3475$ grains per yard worsted.

$.231 + .3475 = .5785$ grains per yard when combined.

$\frac{.231}{.5785}$ = amount of cotton or 40 per cent cotton.

$\frac{.3475}{.5785}$ = amount of worsted or 60 per cent worsted.

# SLO-FLO

**The Scientific Lubricant for Textile Machinery**

## cuts out oil stains on spinning frames

Where you have thousands of spindles in operation, all running at top speed, you are bound to have oil stains when you use ordinary lubricants. *Oil stains are so universally accepted as a matter of course that many mill men smile when we assure them that they can be prevented.* But the most hardened skeptics are convinced when they see the records of mills that have eliminated oil stains by means of the non-spattering, non-dripping lubricant, SLO-FLO.

Made to just the right degree of viscosity, SLO-FLO doesn't "throw", no matter how rapid the rate of revolution, but stays right on the lubricated part.

Moreover, you get *100% lubricating efficiency* out of SLO-FLO. There is an appreciable saving in *power* as well as in stained goods in mills that have adopted this scientific lubricant.

***No Obligation for Demonstration.***

Made by the ACALORIC Process

**SWAN AND FINCH COMPANY**
NEW YORK

*Quality Lubricants Since 1853*

Chicago
Buffalo
Philadelphia
Detroit

Atlanta
Boston
Charlotte, N. C.
New Orleans

CATARACT REFINING COMPANY, Limited
Toronto, Canada London, England

SCIENTIFIC LUBRICANTS for SCIENTIFIC LUBRICATION

.40 × 22 = cotton per dozen pairs or 8.8 ozs. cotton.
.60 × 22 = worsted per dozen pairs or 13.2 ozs. worsted.

M. R. G. (Mass.)

## The Employment Manager.

EDITOR COTTON:

I have been asked many times by people inside and outside the mill why a mill has an employment manager. I have given these as some of the reasons, as I see it: (1) It is done to take some of the responsibility of getting help away from the foremen. (2) To enable the mill to be posted on the class of help looking for employment and leaving employment. (3) To reduce turn-over to the least possible amount, thereby reducing the large amount of money which must be expended at the present time to handle "green" help.

Many people are not aware that it costs between $65 and $75 to break in a new man. When they are told this they come right back with "Do you mean to say that if an experienced weaver or spinner or card room hand should leave one mill and go to another that it would cost that amount before that hand would be earning money for the company?" No, I don't intend to say that, but on the whole, the turn-over for a period of six months or a year will average that amount. I don't care how experienced a hand is, in changing from one mill to another it will cost the mill some money before that hand gets familiar with his new place.

Furthermore, take the "green" hand who has to be broken in. With the scale of wages which must be paid now-a-days, a new man cannot be gotten to work for less than $14 or $15 a week just to learn, and some won't work for that. It takes from two to seven and eight weeks to teach a man to properly operate a job, depending upon the character of the position. Some experienced hand must be paid all the time he is instructing the new one. His wages, together with those of the new hand, will soon amount to something and if a mill gets off for $65 or $75 it is fortunate, for in many cases it has been found that just about the time a new worker is able to get along on his job by himself, he goes to some other mill and that means the same thing over again if an experienced hand can not be secured. So it will be seen that labor turn-over is a very expensive item in manufacturing today.

Some employment managers have made good, and many have failed. The reasons the majority have failed are many, but the flagrant reason, to my mind, is this: they were not able to fill the bill when they were employed. It may seem and look very easy to hire help, and it would be a simple matter if that was all there was to it, but in order to be a successful employment manager today, a man should, to my mind, have in the first place, the following qualifications: He should know something of the mill and machinery from the picker room to the time the finished product leaves the mill. If he has that knowledge he is then in a position to do a world of good in his position. For instance, if a weaver came for work, a manager with the experience referred to could practically tell, during a talk, whether the applicant could really weave, or whether he would make a try and fail, at the same time spoiling a lot of valuable material. This same condition also applies to the other departments.

It is a well known fact that a great deal depends upon the employment manager and that he has much to contend with. There are many foremen today who are only too glad to get the problem of hiring help off their shoulders, and besides, it gives them, for the time being, a loop hole to get out of the fact they cannot handle the help, for with an employment manager in the plant they are under the impression that all they have to is to report every morning what help they are short of. However, if the employment manager is up-to-date and on his job, he will look into the reason for each vacancy and he is likely to find the cause in practically every instance. And in some cases, if conditions are not changed, there will soon be an opening for a foreman.

However, all the blame cannot be laid on the foreman, for, as I have stated, if the employment manager is not experienced in all parts of the mill, when a room is short of help he is likely to push a lot of undesirables and "mis-fits" onto that particular foreman, and then when the foreman complains he is very often told that the employment manager is there to keep the machinery running.

It hasn't been so many years ago when the foremen hired their own help, in fact many do so today, and I think most of your readers who were foremen a few years ago can remember how good the help were, as a class, and how hard it was to get a job in those days. When a worker did get through, several were waiting to take his place. As Briggs says, "Them were the days." But not so today. Now, when a foreman loses a man it takes some time to get some one to replace him and the chances are that the new one will be a "green" hand and will have to be broken in. All such things as this will cause a foreman more or less worry if he has the mill's interest at heart. I know it affects me in this way, but as my turn-over is very small, so are my worries few.

So, to be a successful employment manager today, one must have some understanding of the mill and its equipment. He must also be civil and polite at all times, and be on the look-out for good help, which means that he must use his brains both outside the mill and inside of it.

I have always believed that if a person is looking for work or is asked to take a position, and it can be shown during the initial interview to be a position worth while, that when an employee is kept track of by the employment office, there will not be much trouble in keeping him satisfied. We all know that a satisfied hand today is almost worth his weight in gold, but a big trouble today is that when a hand has gone through the employment office into the mill to work, all that is ever kept in mind of him is a record in the office; and when he gets through there is some explaining to do. This could be avoided if the employment manager would keep tab on each new employee until certain everything is o. k. By this procedure it might be found that an employee is not fitted for the position in which he is placed and could probably be better placed in some other position or department and thus avert a great deal of trouble. I have seen so much of this in my experience that I know what I am writing is true.

As it will, in my opinion, be only a matter of time before all the larger mills will be looking for employment managers, it behooves anyone who is thinking of taking up this line of work to get all the inside points of the help

# BLEACHERS!

You are hearing of the "Better Bleach". That means that the trade wants a better bleach (without increase in cost.)

They want no more goods that turn yellow; that have lost a good part of their strength; that are harsh and hard instead of soft and elastic.

You know that you can satisfy this demand only with the peroxide bleach, which we will teach you.

Get busy!

THE ROESSLER & HASSLACHER CHEMICAL CO.
41st Street & Sixth Ave.
NEW YORK.


game as it is played today. I think everyone will agree with me that there never was a harder question to settle than the present-day help problem. If a man in charge of a room or factory does not have help who are "up to the game," he is very likely to find himself in hot water without any effort on his part to make it so. K. F. (R. I.)

## Drafting.

EDITOR COTTON:

The art of drafting is the basis of the success of every cotton mill and too often it receives very little consideration. For instance, most all literature pertaining to textiles points out the importance of a worn saddle, rolls not properly weighted or spaced, dirty rolls and rolls not properly oiled causing friction, but, as stated, very little attention is paid to the friction caused by over-drafting the rolls at each process.

Over-drafting in any cotton mill is very detrimental to the strand in process for several reasons. It makes the strand uneven in places; when the twist is inserted in the strand the largest amount of twist per inch is found in the light places of the yarn, giving the yarn a still more uneven appearance; it shortens the length of the strand.

Machinery builders have no special weighting for different mills, the weights being all the same. There is always some friction on a leather-covered roll, even if a mill has a very light drawing sliver to begin with. If the length of a light finished drawing sliver is shortened at each process by the friction, then the length of the heavy finished drawing must be shortened still more. This friction is not felt much on the processes where no twist is inserted, but on a speeder, spinning frame or mule the thread itself shows this defect. On a speeder the surface speed of the front roll and the excess surface speed of the bobbin over the flyer should be equal, or in other words, the bobbin must be made to retard, so that its surface speed will be equal to the surface speed of the front roll. In such a condition, the bobbin winds on just as much roving as is delivered by the front roll. It should be seen that when a front leather-covered roll is over-drawing the friction is great, because if the strand is too bulky it is a dual operation between the front roll pulling the proper amount of fibers from the second roll, and the fibers offering enough resistance to cause friction on the front top leather roll. When there is friction on the front roll the length of the strand is shortened, and when the strand is shortened the relationship of the surface speed of the front roll and that of the bobbin is destroyed. Besides, the contraction of twist is increased correspondingly.

Some mill men have the fixed idea that changing the lank roving to help the carder is a great saving. Not knowing the art of drafting, little do they realize how much they are to blame for the uneven yarn made by the change.

Uniformity in the size of the yarn or roving is one of the prime requisites for all successful manufacturers. Of course it must be admitted that absolute uniformity in yarn is an impossibility, but it must also be admitted that the limits within which differences in the size can be tolerated vary with the class of goods and the profit in manufacturing.

Over-drafting is most detected in ply yarns, especially if the folded yarns are of a different color. Picture in

your mind, if you can, a black yarn folded with a white yarn, both uneven in spots. An experienced mill man can see by the twist running to the light places in the yarn that such a ply yarn would have a very bad appearance. The coils would be much closer together where the diameter of the yarn was smallest and further apart where the diameter of the yarn was largest.

If the places are longer than the draft on the spinning, then the trouble is in the preceding process. However, to prove that those short defective places are made in the spinning, notice, when there is a lap on one boss of the front roll, how the yarn made on the other boss will have light and heavy places about an inch in length. The action here is about the same as when the frame is over-drawing. The lap on the other boss causes a certain amount of lagging, the same as when the front roll is checked when it has too much to do, either by a heavy hank roving or by roving having too much twist.

However, I want to repeat, to make an even ply or single yarn is an impossibility. The only remedy is a light sliver and also a light hank roving with as little twist to the inch as possible. For 30s to 40s yarn, the finished drawing sliver should not be heavier than 40 grains to the yard.

Wash (Conn.)

## All Published Answers are Paid For.

EDITOR COTTON:

Following are a number of questions, together with my answers thereto, relating to the management of help and, I think, pertinent to the present-day help problem. I am therefore passing them on to the readers of this department, hoping that they will be of service.

Question No. 1. Does it pay to move a hand from his present job to another job against his will?

Answer. It is not a good idea to hire anyone for any particular job. It is best never to change help if it can possibly be avoided, but when it becomes necessary, good judgment should be used and the worker changed who does not mind it. It is a good policy to have in a department two or three hands who can be changed in necessity, even if they must be allowed enough extra pay for the trouble they have in straightening up other hands' work. If a foreman has a hand who, he thinks, would quit rather than change, he should not ask that hand to change, but try to make him think that he would not let him change if he wanted to. In a little while the hand will be coming around asking to be changed once in a while, a result of psychology and human nature.

Question 2. If a hand refuses to change and suggests some one else be put on the work, which should be put on?

Answer. As long as the first one I asked was in the mill, I would not put anyone else on the job, unless I wanted someone for overseer and I was going to do something else. After I told an operative I wanted him to change, he would either change or quit and not work for me any more until he did what I wanted him to do.

Question 3. Should I ask Tom Jones, a section man, to go on Jim Farr's section and run the head doffer's job, when Tom Jones says his head doffer is out and that it is his place to run the doffers on his own section?

Answer. In the first place I would not ask one sectionman to go work on another man's section, unless he was a spare man, then he would work at anything I wanted him to or get off the job. In the second place I would not have a section man in my room who would try to tell me what to do when I was telling him what I wanted done. Thirdly, if my section man had a head doffer out, and I could not fill his place, I would tell the section man to look out for his doffers the best way he could.

Question 4. If Bessie Bates stays out a day, and when asked why, she says she "was out looking after some business," and the foreman says, "Go out and rest today for me" and she replies that Alice Wright was out yesterday for the same reason, and the foreman knows it but has only one extra hand to spare out, what is the best thing to do?

Answer. In the first place I would not let any hand catch me in any such trap, unless I wanted to be accused of being partial with my help. In the second place I always teach my help that if they will come to the mill and ask off when not able to work, or because of important business, I will let them off even if I have to stop their work. That is the only way to keep help from staying out. No one from the president to the sweeper works all the time. Overseers, second hands and some superintendents are to blame for the conditions regarding the help staying out, because in some cases the help know if they go to the mill and ask off they will not be listened to and if they are let off they will have to listen to a lecture for 15 or 20 minutes as to why they want to be off and why they never want to work any. A very easy way to break up laying off is to go around and explain how much nicer it is for the help to come down and ask off and how much more will be thought of them and how much easier it will be on the foreman and second hand if they will stay on their work until it can be arranged to let them out. Then let them out if it hurts for a while. It will soon get better.

Question 5. Is it best to give a girl's frame sides away for a while, if she makes a habit of staying out on Monday?

Answer. I don't think it best to take a girl's sides because she doesn't show up on Monday. I would go to that girl on Tuesday morning and say to her, "Little girl, if you can't work on Monday, you can't work on Tuesday or any other day in the week." Unless she made it satisfactory with me for being out on Monday, I would say, "Now, if you are not here next Monday I am going to send you out when you come in until you make up your mind to work on Monday." And I would be as good as my word. If it takes that girl one week or one year to make up her mind, that is just how long she would be out.

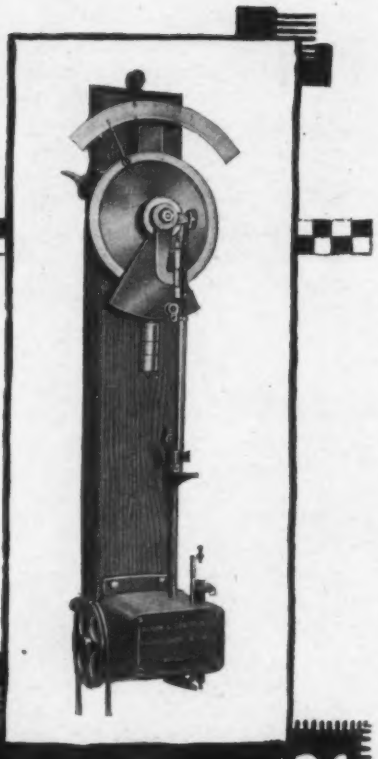
Question 6. What should be a real section man's pay?

Answer. I think that depends upon the number of work being made, the size of the job, the condition of the frames, the location of the mill, town, etc.

Question 7. Which is the best requisite for good production, the head doffer, section man, or a good oiler?

Answer. A room can get along well without a head doffer, but it is impossible to get along good without a good section man and a good oiler. Of course, if I had to run a room and was allowed only one of the three I would take a good oiler. The section man should get the most money, and the head doffer and oiler should rank next to the sectin man. Yes, a spinning room section man is worth as much to the mill as any loom fixer or any fixer or grinder in the carding room, and they ought to have as much. I am glad that many of the mills are realizing this fact and

# SCOTT TESTERS:



Scott Testers are built on the inclinable balance or dead weight principle, the stress on the specimen raising a weight or pendulum suspended from the recording head. No springs are used in any way to influence the test. Heavy, simple, and practical construction provides for overloading and abuse and assures long life and constant service. The design is such that these testers are equally well suited to laboratory and mill work. All parts are made to United States standards and are interchangeable. This type of dynamometer can be calibrated to prove its accuracy in a few minutes without the use of special apparatus. Our many models, and attachments for same, make it possible for us to supply testers for almost any special condition. We earnestly urge that you submit your testing problems to us.

*New illustrated catalog on application.*

**HENRY L. SCOTT & CO. Providence, R.I.**

## COTTON MILLS SHOULD USE

## Commercial Acetylene For Welding

Supplied in portable cylinders on loan basis without deposit.

Only the purest gas can safely be trusted to meet the exacting demands for cotton mill welding repairs. Commercial Acetylene is a gas of absolute purity.

WRITE FOR OUR SERVICE AGREEMENT

**Commercial Acetylene Supply Co.**

204 Trust Company of Georgia Bldg., Atlanta, Ga.
Main Office: 30 Broadway, New York City
203 S. LaSalle St., Chicago

Aurora, Ill. Boston, Mass. Bound Brook, N. J.
East Deerfield, Mass. Toronto, Ont. San Francisco, Cal.
Moberly, Mo. Berkley, Cal.

## C. M. Wall & Son

**Southmont, N. C.**

Manufacturers of North Carolina BOX SHOOKS, BOX LUMBER and CRATING MATERIAL.

We Make a Specialty of the Textile Business.

are paying section men in spinning the same as they do loom fixers.

Question 8. Who, in the spinning room, should get the most money?

Answer. The overseer should top the pile. Then the second hand or assistant overseer and section men next, head doffers and oilers and banders next, doffers, end piecers and spinners next, then roving men, sweepers, etc.

In regard to house room, I do not think any family ought to have less than three rooms, and four if possible. A family of six ought to have five rooms, a family of eight to ten should have six rooms with bath and toilet and a family of over ten ought to have an eight room house.

I am sending you this material for publication in the hope that it will be of assistance and value to the spinning foreman who are readers of the Practical Discussion Department. The answers herein are only my personal views on each question, and I hope that others will let us learn of their views through this department of COTTON.

D. S. G. (Ga.)

## Two Carding Problems—And Their Solutions.

EDITOR COTTON:

Being called upon a few days ago to examine a card on which the foreman and card grinder had been unable to find the cause for the trouble, I found a rather peculiar incident. The card had been ground and set up twice and each time the stock of cotton would fill up on one certain side of the cylinder clothing and cause nappy work, and besides, the card would become choked down from being loaded with cotton. I asked some questions about the things on a card which usually cause such trouble and the men seemed to have had those things investigated and found to be in very good condition. Then I asked about the cylinder clothing. They said it looked o. k. and the card was set up good. They had set the card all over from the feed plate to the doffer comb on the front, and had turned the licker-in as they set it to see that they had not made any mis-sets on a high place, and this had been done on the cylinder and doffer, but the same trouble happened on each occasion after starting the card up.

It looked rather amusing for a while, then the draw screws were all examined to see that they were not slipping and resting on the face of the clothing wire, that is, the stands that hold up the flats were inspected, because if the draw screws which support the flat stands work loose and allow the stands to give away, the flats will rest on the cylinder clothing. After this was done and when everything looked all right, we started up the card again and after a short period of time the same trouble again showed up, that is, filling up on about one-half of the cylinder fillet. We again stopped the card and had it cleaned out, and upon inspecting the cylinder fillet we found it too soft on the side that had been filling up, the other side being in very good condition. Thus it was found that the clothing on this particular side had lost its strength in the foundation of the clothing and had allowed the teeth to bend back when the card began taking on its load of cotton, and in bending back, the teeth had lost their carding strength, the cotton being matted up on the cylinder. We then proceeded to put on a new cylinder fillet and when this was done the trouble was at an end.

Another little incident I consider well worth a mention is one that popped up some time ago on the cards, when the cloth was found filled with black specks and other trashy matter. For a long time the cause of this could not be located, but after careful study, we decided that it was caused by grinding the card flats on every round the cylinder clothing was ground and the flats not being set to the cylinder except on every other time around while grinding, this caused the flats to be a little further away from the cylinder after the grinding of the flats and not setting them, so from that time on until they were again ground and set, they were off some and consequently the cotton was not being carded as well as when they were re-set. This was tried out and the cloth came cleaner. Now we grind flats only when they are to be set up to the cylinder clothing. Whether or not this will be applicable in all instances remains for each mill to try out; it worked in my case.

T. A. D. (Ga.)

## National Diazine Black D R

The National Aniline & Chemical Co., Inc., announces the production of a new color, National Diazine Black DR, which is a very important addition to the developed black series. Like its pre-war prototype, Zambesi Black D, it is especially valuable for the dyeing of cotton and silk hosiery, producing blacks of exceptional depth and fastness to washing. In direct dyeings it produces grays and slates of very good fastness to light and washing and also excellent dyeing properties. For the dyeing of union goods composed of cotton and wool and cotton and silk, it is also a most important product because it produces uniform shades upon these fibers. The new color is particularly recommended to hosiery dyers, but its general excellent qualities make it extremely useful to the textile trade in general.

The Merrow Machine Company, 28 Laurel St., Hartford, Conn., for more than 30 years manufacturers of overedge sewing machinery, have prepared three booklets for the trade. One of these is a new edition of their catalog of high speed trimming and overseaming, overedge and shell stitch machines. This gives illustrations and descriptive matter concerning their line of machines including their plain crochet, blanket hemming and edging, shell stitch and regular Class 60 machines. In addition are shown attachments and special devices including their power transmitter, presserfoot lifters and cutter grinder. This booklet, which contains 50 pages printed on coated stock, is also issued in a number of foreign languages for distribution in other countries where Merrow machines are used.

Another of these booklets gives instructions for setting up and operating the Merrow high speed trimming and overseaming sewing machines included in Class 60. The third booklet contains revised instructions for the Merrow high speed plain crochet, blanket hemming and edging, and shell stitch machines. These two latter booklets are illustrated and contain 48 and 40 pages, respectively, and are printed in foreign languages for export distribution, in addition to the editions in English.

*The* CHICAGO
*Approved Portable*
WATCHMAN'S CLOCK

Clock with case opened showing Dial in place and Partial Registration.

with its special Waltham movement, its lock stations and its superior quality throughout, is especially desirable for mills and factories and for either in-door or out-door patrol.

*Write for Catalogue.*

CHICAGO WATCHMAN'S CLOCK WORKS

CHICAGO. 1526 S. Wabash Ave.
NEW YORK. 11 Church St.
ATLANTA 14 Walker St.

GOOD HOMES
MAKE
CONTENTED WORKERS.

*Increase Efficiency*
*Reduce Turnover*
*Stabilize Labor*

AMERICAN CITY
ENGINEERING CO.

Civil ENGINEERS Sanitary

*Investigations and Reports*
*Plans, Specifications and Superintendence*

Town Planning, Community Development, Industrial Surveys, Industrial Housing, Water Supply, Sewerage, Sewage Disposal, Garbage Disposal, Electric Distribution, Gas Distribution, Hydro-Electric Power.

PITTSBURGH, PENNA.

Peoples' Bank Bldg.

The Many
Saving Features
OF THE

"UTSMAN"
Quill Cleaning
Machine

Are well worth studying when considering the installation of a Quill Cleaning Machine. It is

**QUILL SAVING.**

Due to the patented construction of the "UTSMAN" Quill Cleaning Machine there is 98 per cent less damaged Quills during the cleaning process than is the case when Quills are cleaned by hand. Then, too, it is

**WASTE SAVING**

As you can very quickly check the spinning from the production of an "UTSMAN" Quill Cleaning Machine by comparing the Quills cleaned per day with the amount of waste removed, which makes it

**LABOR SAVING**

As one operator and a helper can clean 40,000 Quills in a 10-hour day. This makes the "UTSMAN" Quill Cleaning Machine a

**TIME SAVING**

Device as it does away with your orders being held up waiting for cloth from your weaving room. This will enable you to accumulate more profits and larger dividends.

Write for Catalog. It Will Show You How To Cut Your **Quill Cleaning Cost.**

The Terrell Machine Co.
Charlotte, N. C.

## Finishing Plant Pointers.

BY O. H. FORSDALE.

In every manufacturing industry there is a certain percentage of goods which for one reason or another cannot be classed as perfect. Such goods are known as seconds in the vocabulary of the cotton converter and sell from 15 to 25 per cent below the price of perfect goods. Most commission firms receive gray goods for conversion on the five per cent basis, that is to say, they promise to turn out 95 per cent perfect goods. It is sometimes the case that the five per cent limit is persistently over-reached and steps must be taken to bring conditions back to normal.

The first point of importance is the initial product. No matter how carefully goods are handled in process they may be seconds before they are taken from the gray goods bale. A rigid inspection should be maintained by the converter to protect himself against oil or rust stained, hook-holed, over-sized or narrow goods and those under their proper strength.

The gray room, where cloth is laid out and sewed before the singeing process, should be kept scrupulously clean. Employees should be warned against stepping on the material and grinding dirt into the seams, since serious damage to the copper rolls on the printing machines may result in this way.

The singe room is generally located near the gray room and where coal is used for fuel a high standard of cleanliness should be observed in order to prevent particles of coal dust lodging in the fibre. The singe plates should be kept smooth and clean. It is always good practice to keep a close watch on the water supply to make sure that lint or dirt is not clogging up the pipe. The writer recalls an instance where the feed pipe line of the singe apparatus was cut into temporarily to supply another machine with the result that the reduced pressure on the singeing machine was not sufficient to eliminate sparks and considerable damage from fire resulted before the trouble was located.

The up-to-date bleach house presents a good opportunity for chemical control. The sours should be titrated at frequent intervals as should also the chemicking. Both of these titration tests are easily installed by a chemist and maintained thereafter by employees having no chemical training. The cloth should be treated for chemic with starch and potassium-iodide reagent after leaving the anti-chlor machine. The final testing should be made after the material reaches the white bins to ascertain whether or not the acid has been worked out or neutralized. Methyl Orange is suitable for this purpose.

The troubles which arise because of faulty bleaching usually manifest themselves in the subsequent processes. Goods containing acid develop hydrocellulose on the dry cans and are very susceptible to psuedo-mauveine or "pinks" if they are stored near aniline fumes. Goods containing chemic are tendered through the formation of oxycellulose which also manifests itself in the form of dye resists. The most important point from the viewpoint of seconds is the maintenance of the white sour strength. This should always be strong enough to neutralize the lime and caustic. If not, the aniline black prints are usually found resisted.

Oil on the cloth is the worst enemy of the bleacher. He must be constantly on his guard since his work is done in the rope form, making this defect harder to detect. The oiling should be done by one man, preferably the second hand. The writer was once called in to discover the cause of an epidemic of oil stains. Oil cans were found plentifully distributed around the bleach house for the convenience of anyone who wished to lubricate a squeaky bearing. This practice was stopped, the oil cans were collected and locked up, and the responsibility of oiling was entrusted to one man. It was also found that the drip pans were missing or damaged and these were ordered to be renewed. Belts near the washers were housed, as were also couplings located near bearings, and every attention was given to places where there was a possibility of oil dropping upon the cloth. In a few days all signs of oil had disappeared.

Oil is particularly difficult to remove from cloth but experience has proved that a strong soap solution is as good as anything else for this purpose. It is advisable after this treatment to give the goods a short boil in hot water in the kier in order to completely remove the soap which has been rubbed into the fibres. If this is not done light yellow stains may appear.

Rust is sometimes a source of trouble. To avoid this all piping under which the cloth passes should be covered with burlap. The water used should be carefully strained; kiers should not be allowed to become cold while the cloth is in them. Rust may be removed by padding through oxalic acid (1° Tw.) and allowing to remain over night covered up. This treatment of bleached goods produces a bluish shade of white which for some purposes might be highly desirable but for printed goods it is rather objectionable since it changes the ground and makes it difficult to match up goods in the same lot.

Air stains and bin stains are due to bacteria and are likely to be the most troublesome during the hot summer months. If the goods are left unprotected by sufficient covering, especially over the week end in the white bins, air stains will result. The use of ammonia furnishes food in the form of nitrogen and is apt to increase the number of stains; therefore two washings are advisable in order to completely remove the ammonia.

Bin stains are the result of the goods remaining wet for some time in contact with wood. Under favorable conditions of food, moisture, heat and darkness, bacteria readily multiply. As a remedy the installation of cement bins is recommended and the floor of each bin should be covered with large, smooth rocks in order to provide good drainage. Soap should never be used for cleaning out the bins but they need frequent scrubbing; continuous treatment with fairly strong formaldehyde will hold bacteria in check. A light chemic readily removes air and bin stains; psuedo-mauveine is removed in the same manner.

The bleaching process is very important since a bad beginning in the bleach house is productive of a high percentage of seconds. Cloth coming out clean has a hundred percent better chance of being perfect than if it had to be taken back and passed through the machines a second time.

The white room where the cloth is dried and stored should be perfectly clean. The goods should be carefully tested for acid before drying. All stains should be called to the attention of the bleacher and a report kept of all boxes taken back to be cleaned. The dry cans should be provided with expanders to prevent double edges, which are frequently a source of seconds, especially in printed linings having a dyed ground. Where the goods come too wide the dryer can stretch them by pulling through pot-eyes. This practice is far better than lapping on the workers, a practice which often results in damaged goods. The dry cans should be housed to keep dirt from getting on them and marking off on the cloth. Whenever the cans are cleaned it is a good plan to run wet gray goods over them until all the dirt is picked up. No matter how clean the white room may be, the writer believes in having individual covers for each roll of cloth as an additional protection against unforeseen accidents. No cloth should be wound up which is stained or otherwise discolored, thus making it easier to localize future stains.

Boxes are a prolific source of stains. The best plan is to have them marked according to the different departments, as for instance "White Room," "Print Room," "Calender Room," etc. In an instance recalled by the writer, white goods were pleated into a box previously used for aniline black. In an hour's time a large portion had turned pink due to the formation of psuedo-mauveine. All boxes should be cleaned at frequent intervals and fresh paper should be put in every time they are refilled. Soap, if used, should be carefully removed by scrubbing to protect against yellow stains when the cloth is put in wet and subsequently dried.

The color mixer can do much to keep down seconds. If his color is properly mixed and strained and due care is taken in the matter of clean tubs very little trouble should be encountered when the color is run.

The printer, being a well paid workman, should be held accountable for snaps, streaks and other printing defects which tend to bring up seconds. It is his duty to be ever vigilant and to stop these troubles at the beginning, not letting them run through ten or fifteen pieces before locating the trouble. If the printer has a color which is snapping persistently he should inform his superior and have steps taken to have the box strained. At any rate, he should put himself on record as having complained of the particular color if he is to clear himself when held accountable later on.

In the starching and calendering all cans should be clean. The drip pans should be kept in good condition, the calender bowls wiped off frequently and the tenter chains kept in good repair. It is a good practice to let the tenter run for an hour or so without cloth after oiling to safeguard against any possible spattering of oil. The agers should be well ventilated and housed to prevent steam from escaping into the room and condensing on the ceiling. This sometimes proves a source of seconds especially if the ceiling is of wood and aniline black prints are stored before being aged up.

A rigid inspection should be maintained between each department and all stains reported, otherwise the last department handling them should be held accountable. Such a system makes for cleaner work and also aids materially in locating the source of the troubles.

The first inspection after folding is the most important since it is at this point that future policies are adopted. It is advisable to look over seconds at least once a day. This keeps the trouble well in hand and enables the inspectors to check them before further damage is done.

The following cases are typical: A certain color was found to be a chronic snapper. Experiments were at once conducted to find a better substitute. A certain fancy weave showed a tendency to crimp in the printing. A short tentering before printing eliminated this. Another fifty pieces showed a mark off in the soaping. A stretcher installed in the soaper kept the goods at open width from the start. Frequent instances of double edges were found to be caused by uneven sewing in the gray room. Continuous recurrence of stains was traced to the tenter. Mysterious yellow stains were finally located in the first boil. The top layers of the cloth apparently were acting as a filter for the impurities in the cloth causing stains which were too heavy to remove in the subsequent processes. A heavy piece of lapping spread over the top of the cloth put an end to this trouble.

In another case a constant proportion of seconds was due to the location of a damper over goods in the ageing process. The power for these machines was supplied from the floor below and this necessitated an opening in the floor for belting. At irregular intervals the damper became flooded and before warning could be given water trickled through the belt hole upon the cloth. A cement bed was installed with the power drive on the same floor as the damper thus eliminating the hole and the dripping water.

The writer has made a close study of the causes of seconds and has tabulated them from day to day. At the end of each week he is able to estimate which department is causing the greatest proportion of seconds.

Each folder is required to set aside all goods which he considers seconds. These are carefully inspected, oftentimes cut-outs are made and goods passed at the jurisdiction of the inspector. Whenever possible goods not up to standard are taken back for cleaning. This is usually possible in case of aniline black and vat colors. Pigment colors do not as a rule stand the rubbing.

As a last word, attention may be called to the following points: First, the bleach house should not be congested, a condition toward which there seems to be a general tendency. If a new house is built, a capable engineer should be consulted with regard to the location of pot-eyes, reel speeds and the like so that the pull on the cloth, so destructive to its strength, may be reduced to a minimum.

As to the general construction of the mill, the ceilings should be high and the floors constructed of cement. This does away with stains from dripping water. All overhead shafting should be eliminated wherever it overhangs the cloth in the process. Steam power should be replaced by motors. Lastly, the employees should be made to realize that they are handling fabric and not iron.—*Color Trade Journal.*

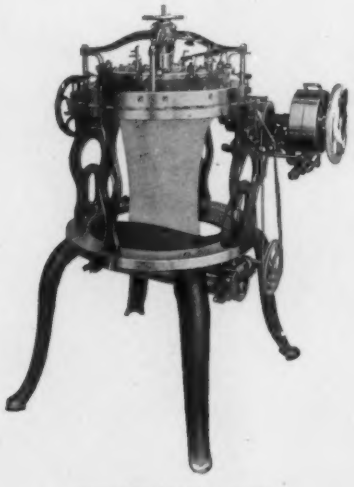
---

Method is an offspring of punctuality.

# KNITTING SECTION


## Our System of Underwear Machinery

will enable you to produce the BEST FABRIC at the LOWEST COST. This is being proved daily by hundreds of our customers. We would like to show you.



ESTABLISHED 1865

## Scott & Williams

INCORPORATED

366 Broadway - - - - - NEW YORK
Hamilton, Ont. Charlotte, N. C.
Main & McNabb Sts. 1006 Realty Bldg.

# Strongest
## Where Others Are Weakest

At the point where two seams cross—the point where the old fashioned seam is weakest—there the Flatlock seam is strongest. Where the ordinary seam bunches into a welt that causes irritation and discomfort to the wearer, the Flatlock seam is smooth and flat—no thicker than the fabric itself.

The Flatlock seam forms a perfect union of two abutted cut edges. It is woven into the fabric, becoming an integral part of the garment—smooth, flat and comfortable. But these are not the only reasons why more and more people, when buying underwear, are asking for garments finished with the

## "FLATLOCK" seam

REG. U.S. PAT. OFF.

The illustration shows that it is a *handsome* seam. It improves the appearance of knit underwear, therefore making it more saleable.

It is a *locked* seam. Any number of stitches may be cut, yet it cannot rip or ravel in either direction.

Do you wonder that the Flatlock seam is one of the greatest selling points knit underwear can possess?

*The Seam That Sells the Garment*

(ACTUAL SIZE)

Trade Mark
Reg. U. S. Pat. Off.

WILLCOX & GIBBS SEWING MACHINE CO.
HOME OFFICE: 658 BROADWAY, NEW YORK
*Corner Bond Street*
**Willcox & Gibbs, S. M. Co., Ltd., London, Paris, Brussels, Milan**
*Canadian Representative: W. J. Westaway Co., Ltd., Main and McNab Sts., Hamilton; McGill Bldg., Montreal*

Trade Mark
Reg. U. S. Pat. Off.

# Analysis of Knit Fabrics

BY G. R. MERRILL.

There is a certain similarity between the analysis of woven and knitted goods. Each, of course, is made up of yarns; each has some particular arrangement of these yarns which might be spoken of as design; each has certain, of its characteristics repeated in a given interval of space; and each has a definite weight per unit of measurement. So, if we take an outline for the analysis of woven goods, we may make a corresponding outline for the analysis of knit goods. To this end, let us use the following outline of an analysis of a woven fabric:

A. Weight per yard.
B. Threads and picks per inch,
C. Weave,
D. Size of yarns,
E. Width in reed.

The weight per running yard of a piece of cloth is used to designate it from similar pieces lighter or heavier. A very heavy woolen may be termed a 16 oz. Melton, or again, we may have a 12 oz. worsted, each meaning that the material weighs that number of ounces per running yard.

The system for designating weights of knit goods varies slightly. For sweaters, underwear, scarfs, ties and some other similar articles, we use the weight per dozen. For hose (which we will not consider in this article) we use the weight per dozen pairs. For materials such as webbing, we use either the weight per running yard or the weight per square yard. In all cases, if the article has two kinds of material, remember somewhere in the analysis to get the weights of the individual kinds of material, in order that the percentages of each may be determined. These figures are used both for determining costs of manufacture and to class the goods for custom duties. Thus our first item would be, *Weight of Goods.*

The second item respecting woven fabrics is the number of threads per inch running each way in the cloth. In the cloth, we count the number of threads per inch in the warp and then the number per inch in the filling.

Correspondingly, we count not the threads but the wales and courses. That is, count the number of lines of loops, made by separate needles, per inch and then count the number of courses per inch and get the second item in the outline, *Wales and Courses per Inch.*

Weave is that feature which may give an individuality to the appearance of the cloth. The weave may produce stripes, lengthwise or crosswise, twills, blocked effects, etc.

In knitting, these effects are obtained by using various stitches, alone are in combination. Consequently, it is necessary to ascertain what the stitch is in the fabric under consideration. Where the fabric is fancy, it is necessary to note the various stitches used and their location with respect to each other. So, the third item is *Stitches.*

In determining the weave of a piece of cloth, it is frequently necessary to ravel a small portion of it. If some of the yarns are not separated from the cloth for this purpose, it is necessary to ravel them to determine their size. Taking a given length of yarn and weighing it, the size is determined. This must be done for each kind of yarn in the fabric.

In the knit goods, sometimes the fabric is raveled but in any case, it is necessary to ravel enough of the fabric to determine the size of the yarns. The size is determined by weighing a known length just as in woven fabric. Care must be exercised to see that all of the yarns are sized, for often more than one size is used in the construction of a garment. The fourth item, then, is *Size of Yarns.*

The width in the reed is an item determined from the width of the cloth and the "take-up" in the yarns. Those who are well enough acquainted with fabrics of any type can often tell what the reed width should be to give the fabric under consideration. The width in the reed is generally given by specifying a reed with a number of dents per inch and a specified number of threads per dent, thus settling the number of threads per inch in the reed (while the cloth is being woven).

The determining feature of the width of the knit fabric during knitting is the needle spacing. The cut or number of needles per inch is the basic feature determining the width of the fabric while knitting. There is a certain amount of variation caused by differences in stitch, cam adjustment, yarn tension and the weight on the fabric while knitting. Our final item, then, is *Cut or Needles per Inch.*

Gathering together these five items and putting them into tabular form, we have an outline for an analysis of knit goods. If this outline of major topics is filled in with some of the minor details, the outline is much more valuable. There is one item under wales and courses which is somewhat after the nature of "takeup" in weaving, but still is not analogous. That item is *Stitches per Foot of Yarn.*

**Outline of Analysis.**

I. Weight of Goods:
   Sweaters, Scarfs, Ties, Underwear } Weight per dozen
   Webbing, etc.—Weight per square or running yard
   Hose..... Weight per dozen pairs.
II. Wales and Courses per Inch:
   Counted at, at least, three places and averaged for the final figure,
   Stitches per foot of yarn.
III. Stitches:
   Various kinds and their arrangement.
IV. Size of Yarns:
   Size of each kind and the proportion of the different fibers, if two or more kinds are used.
V. Needles per Inch or Cut:
   Estimated from experience or from comparison of the fabric with other fabrics.

An example of the use of this outline is given herewith, using a piece of webbing, the width of which was not given. A rectangle 2 by 2.25 inches was cut from the sample and weighed to determine the weight per square yard.

I. This rectangular weighed 14.5 grains.
   Then by proportion, a square yard weighs,
   2 by 2.25 : 14.5 = 36 by 36 : the weight
   4.5 : 14.5 = 1296 : the weight
   $14.5 \times 1296 = 4.5 \times$ the weight

The weight = 4176 grains, or 9.55 ozs. or .597 lbs. Thus the sample weighed about 9.5 ozs. or .6 lbs. per square yard.

II. The wales in three separate inches counted eleven, thirteen and twelve respectively and in two consecutive inches twenty-four. Hence the wales per inch were twelve.

The courses in three places counted eleven and one-half, thirteen and fourteen and for two consecutive inches twenty-five. The courses, then, were twelve and one-half per inch.

III. This sample was entirely of plain stitch.

IV. The sample was composed of two strands of cotton yarn knitted together, one blue and one white.
40 yards of the blue weighed 35 grains,
40 yards of the white weighed 46.2 grains.

THEN $\frac{40}{840} \times \frac{1000}{35} = \frac{1000}{105} = 9.53$'s blue

AND $\frac{40}{840} \times \frac{1000}{46.2} = \frac{1000}{138.6} = 7.22$'s white

Then the blue yarn is in all probability intended for 10's and the white for 7's.

V. The wales per inch of the fabric were 12. From the texture of the fabric and the appearance of the loops, and the extent to which the fabric could be stretched, it was probably made on a machine having about ten needles per inch.

## To Remedy the Cancellation Evil.

Philadelphia, the largest but least organized textile city in the United States, in inaugurating the movement for the meeting of all allied textile interests of the United States, held in New York early in December, in the preliminaries for the organizing of the textile interests for eliminating cancellations and return of merchandise perhaps gave to the country the first comprehensive idea of the extent to which trade abuses have been indulged throughout a great part of the present year.

The movement had its inception with the Philadelphia Cotton Yarn Merchants' Association, and conspicuous in the project from the start were Charles J. Webb and Joseph R. Grundy, who are among the better known textile manufacturers in the North. The initial meeting, of Philadelphia textile trade associations was held at the Manufacturers Club, November 7. The outcome was the appointment of a committee intended to draft a universal form of contract. At the first meeting of the committee, on which Joseph S. Rambo, Rambo & Regar, hosiery manufacturers, Norristown, represents the National Association of Hosiery and Underwear Manufacturers, arrangements were made for the December meeting in New York.

National interest in the project developed from the start, and it at once became apparent that the movement had enlisted the attention and support of manufacturers in practically every textile line, from Maine to Florida and the Atlantic to the Pacific. But, as was pointed out by Mr. Webb forcefully and specifically at the first meeting, unless there shall be the man behind the contract, no matter in what form, it will be little better than the loose agreement under which merchandise generally was sold throughout the slump and in the years preceding.

Cancellations, it was shown, had brought financially strong establishments face to face with bankruptcy, and, as one manufacturer stated, has made "crooks" of honest men. "Because my customers cancelled on me," this person said, "I have got to cancel or have the world know I am a failure."

There were in the meeting men, above reproach, who are forced to evade their yarn contracts because they accepted cancellations of their customers' contracts for hundreds of thousands of dollars worth of merchandise, sold and bought in good faith. Orders had been loosely drawn and in most instances had not been signed. Merchants had thrown back on manufacturers millions of dollars in goods; had returned more than the implied agreement of an irresponsible free booter, and revealed that while there may be honor among thieves it was at a low ebb in merchandising.

"The honor of the American business man is at stake," said Colonel John P. Wood, of the Pequea Mills, Philadelphia, commenting on the complaint of British exporters that American importers were cancelling contracts with sellers in England. That they have been doing this was attributed to the extent of the cancellation method in the domestic trade, for escaping a loss by putting it on the seller.

"It's got to stop somewhere," said one speaker. "The merchant may refuse to take the goods he bought from a mill, and the mill may cancel a contract with a spinner, and the spinner with the cotton grower, but who," he asked, "can the planter select for the person who eventually is to carry the loss caused by some dishonorable merchant refusing to carry his own in a transaction into which he entered in the expectation of getting a profit out of it?"

At least two manufacturers in the Philadelphia meeting had paid dearly to be relieved from the obligations imposed in their contracts for yarn, and yet accepted cancellations from customers without one cent of compensation. One paid more than $100,000 and another $75,000 in adjusting a contract for yarn which their mills could not use because their customers had cancelled contracts. Thousands of business men whose customers had denied the sanctity of contract fared no better. Losses from cancellations and return of goods have been appalling among men willing to bear their own and are reluctant to follow an evader into the courts. All of this was emphasized in the meeting, and made it apparent that the movement then gotten under way had been too long delayed by at least one year.

Champe S. Andrews, Cotton States Hosiery Mills, Chattanooga, Tenn., who was selected as one of the speakers in the New York meeting for the National Association of Hosiery and Underwear Manufacturers, of which he is second vice president, has been striving for two years to bring about an understanding between mill and merchant under which there could be no evasion of contractural obligations.

It is the expectation that out of the New York meeting, attended by responsible representatives of textile interests, there will be a more sweeping movement than even was contemplated when first the project was undertaken.

# The Knit Goods Market

The knit goods market at the close of November was in about the position of the early spring of 1919, when the post-armistice slump first gave evidence of having run its course and distributors displayed unmistakable signs of uneasiness.

While guesses of the last few months went wrong and were recast, to again disappoint forecasters, it probably is a reasonably safe prediction that depression is about to give way to some show of activity, for, as at or near the end of the 1919 period of uncertainty, jobbers are doing precisely what they did then—they are getting together for a better understanding of needs and a survey for ascertaining if prices have not reached the bottom. The first significant meeting of this kind was held at the Pennsylvania Hotel, New York, on the evening of November 23, when members of the Jobbers Association of Knit Goods Buyers assembled in response to a call issued in a manner calculated to attract a minimum of attention, for the average jobber, while he maintains he simply is waiting for stable prices, does not want the world to know his plight as to bare stock bins, lest mills repeat the performance of last year and advance prices on the presumption of enforced buying, regardless of values.

The timid jobbers have had a long wait, which, like most other waits, for something to turn up, eventually has its reward. The reward in this instance appears to be within the grasp of knit goods buyers, for, as frequently has been confessed by leaders among them, manufacturers have approached the end of endurance in striving to name the lowest prices at which it will be possible to produce.

For showing sincerity, a number of manufacturers have named hosiery prices for spring operation that will stick. There is to be no wavering to hasten whatever business is being held up for further evidence of stabilization. These mills either will sell at the recently established prices or not sell at all, unless circumstances in any further test of waiting power might compel them to part with merchandise at a loss to avert something more disturbing. For illustration, a leading mill manufacturing silk and mercerized half hose exclusively has priced the former $6.50 and the latter $3.25. These figures are based on reduced cost brought about by declines in yarn and moderate cuts in wage scales. One of the lines is full mercerized, 220 needle; the other of 12-strand silk.

Another establishment has put a price of $3 on women's 220 needle full mercerized, mock seam. Other prices named as intended to be final for the present, or until demand forces an upward revision or the whole country "goes broke" are: Misses' 28 ounce ribs, $1.25 on size 7; misses' 300 needle carded, $1.90 on 7; misses' 340 needle mercerized, $3.10 on 7; women's 220 needle combed, mock seam, $1.85; women's 20 ounce fine quality combed, mock seam, $2.35; fine combed half hose, 220 needle, $2.

Jobbers have been waiting for low prices that would stay where they were put. The two establishments whose quotations are referred to have called the play. There either will be business at the prices stated or resumption may be regarded postponed indefinitely. To accommodate buyers, mills are adjusting prices to as nearly twice prewar as is possible. But just what is meant by double the values of the period preceding the world conflict is a question, in that there has been no definite understanding as to just what prewar period is meant when used for price comparison purposes.

In 1913 business suffered some disturbance because of uncertainty of what would be the effect of the new tariff schedule which was to take the place of those in the Dingley Bill, and as considerable idleness resulted it may be assumed prices went below the immediate preceding normal. The outbreak of the war in 1914 spread fresh confusion, and in the primary markets there were sharp declines. To establish a comparison with prewar values, therefor, it seems necessary to go back to 1912. Present fixed quotations are about twice the prevailing values in that year, so that it would appear the trade is at a starting point.

Efforts at stabilization bore fruit none too soon, for during November there was such a dumping of knitted goods as never had been known in the domestic trade. Hosiery in second hands was sold well under mill cost, and not a few manufacturers themselves let go of good assets at nominal prices. All the while there was comparatively little buying, except when holders virtually gave merchandise away. A sale of 2500 dozens of women's 20 inch silk boot stockings was made at $5.25 a dozen. Women's full mercerized 220 needle mock seam hosiery was sold in one instance at $2.25 and in the same day turned over at a profit of 40 cents a dozen. A sale of women's 18-inch artificial silk boot—40,000 dozens,—was made direct from a mill at $3.87½. Misses' coarse gauge ribs and men's and women's 176 needle stockings went down to a dollar a dozen, and 144 needle socks were quoted at 90 cents, these lines dropping to levels at which stockings at 10 cents a pair, it is predicted, will appear on the counters of the 5-and-10-cent stores.

One line of hosiery that suffered little from the slump was heathers in worsted and mixtures. Orders for such goods which had been cancelled were reinstated, and merchants were forced to call for deliveries in advance of the stipulated delivery date. Heathers had a good run, despite predictions that lower prices of silk hosiery would crowd them out, and at least one large mill, which promises a number of new color combinations, is preparing to name prices in January for 1921.

Silk hosiery has suffered because of heavy buying early in the year and the reluctance of the public to pay the prices exacted by large retailers, holders being left, presumably, with large stocks. Prices recently fixed by one large mill for its silk lines are slightly more than twice the figures of 1914. The 1914 and present prices follow; 8 strand pure silk, $5.25, moved to $12; 10 strand, $7 to $14.50; 10 strand outsize, $7.25 to $16; 12 strand, $7.25 to $16.50; 12 strand outsize, $7.50 to $18.

These are prices for full fashioned silks. Two lines of women's full fashioned mercerized from the same mill, which in 1914 were $3.35 and $3.50 respectively, now are $7.25 and $7.50.

Another mill, which some weeks named $13.50 for

women's fashioned silk hosiery, withdrew the price after a day of big selling, and is understood to have gone to $14.50. Women's full fashioned silks should be available in the retail store at $2.25 as a top price for regular.

The present outlook is for men's and women's mercerized to sell over the counter next year at 50 cents—twice prewar—and silk half hose at a dollar a pair, also twice the 1912 price. Whether low end cotton hosiery will descend relatively is a question which the future must decide. The answer will depend to a great extent on the extent to which mills push production, the impression prevailing that if available machinery be operated to capacity there may be more than can be absorbed in the domestic and foreign markets advantageously to manufacture.

The Durham (N. C.) Hosiery Co. put out a new price sheet effective November 8. The mill sells exclusively to jobbers and rebates the list prices 17½ per cent on goods priced up to $2.25 a dozen; 20 per cent above $2.25 and up to $4.50 inclusive, and 22½ per cent on prices over $4.50. The company permits a deduction for freight, estimated at five cents a dozen, and invoices, after freight deduction, are subject to a two per cent trade discount. The new price sheet shows the following:

Cotton half hose, full seamless, $1.75 for 176 and 84 needle; $1.85 and $2.10 respectively for two types of 144 needle, and $2.25 and $2.40 respectively for two numbers of 200 needle; three numbers of mercerized, $4, $4.25 and $4.50.

Women's full seamless cotton, $1.75 for 176 needle and $2.75 for same with rib top; 220 needle combed $3, and 50 cents additional for mock seam, same prices for gauze; rib top $3, and $3.50 for 220 needle combed; women's mercerized, $4 for 220 needle with cotton top and 25 cents additional for mock seam; $4.50 for 240 needle.

Three numbers of misses' ribs are priced $1.75, $2.75 and $3.50 respectively on size 7, rise ten cents, fall five cents. A misses' rib full 320 needle is $3 on size 7, same rise and fall.

Exports of cotton hosiery in September—697,380 dozen pairs—brought the total for nine months of 1920 up to 9,415,725 dozens, which was but 61,649 dozens less than for the whole of 1919, and this in the face of materially curtailed production. The exports for September, valued at $2,438,316, were lighter than for any month this year with the exception of August, from which there was a slight increase. The total value for the nine months to September 30 was $30,544,040, which is more than four millions of dollars in excess of the total cotton hosiery exports last year. The destinations of the larger shipments going out in September were:

Cuba, 125,044 dozen pairs; Australia, 184,837; England, 70,482; France, 23,818; Italy, 19,908; Canada, 20,581; Mexico, 17,368; Argentina, 27,649; Chile, 26,172; Peru, 12,509; Uruguay, 23,523; Venezula, 10,222; British India, 18,643; New Zealand, 13,606; Philippine Islands, 12,297; British South Africa, 10,602.

Exports of artificial silk hosiery show a steady and radical falling off, amounting in September to only 48,131 dozens, valued at $429,810. England, with 11,522 dozens, was the larger taker, Argentina ranking second, with 11,159 dozens. Cuba took 7744 dozens and Uruguay 2268.

While exports of cotton hosiery this year probably will exceed by two million dozens the shipments of last year to foreign ports artificial silk will run far below.

Recently there has been very light buying for export, but a contract was made with several mills early in November for 200,000 dozen pairs of 2½ pound socks of wool and cotton on the basis of 50-50. The socks were bought for Russia and Poland accounts, cash against steamship documents at New York, except as to 25 per cent of the invoice value, which was deposited with the mills at the time the contract was signed. Another order, for 150,000 dozens of wool socks, for export, was in the hands of forwarders looking for manufacturers' best price.

Cotton underwear exports show a considerable decline, being valued at only approximately $800,000 for September, while amounting to an aggregate of $9,317,979 for the preceding eight months, which was an average of more than $1,164,000.

Imports of cotton knitted goods are in negligible quantity, totaling less than a million and a half dollars for eight months of all classes. In cotton knitted goods the balance of trade for eight months was in favor of the United States by $37,803,452.

Underwear fared little better than hosiery in the November prolongation of the absence of jobbers from the market, but may be expected to strengthen with the buying of lines for spring. Mills were partly responsible for the attitude of buyers, who some time ago made it plain they would not operate until prices showed signs of staying where put. In an eagerness for business some manufacturers slashed prices until it appeared they were competing for lowest place in the price range.

Jobbers had a sly way of placing an order with the understanding specifications would be given, say, two days later. When details were called for the seller was informed his prices were a trifle too high; that a rival had gone five or ten cents a dozen under. On one tentative order prices were twice cut by each of two manufacturers, with the result the jobber declined to buy, on the ground that as prices had been continually slipping he thought it possible they might slip further.

Practices such as this served to keep jobbers away from sellers, and probably for the first time in many years the spring buying season will be five months late starting. If distributors' requirements prove to be only 50 per cent of normal, there will be difficulty in getting deliveries satisfactory to retailers, and the assumption would be that any great pressure late in the season would work toward advances.

One mill selling the retail trade named spring prices about the middle of November, and they are slightly higher than at the opening in 1919 for spring of 1920, which would seem to indicate that on this line—if the retailers take it—the customer will pay a trifle more next summer than the garments sold for last summer. A specimen advance is to $10.50 a dozen from $9.75, for one of the better selling lines.

Heavy weight underwear, for the current season, has been draggy. The volume of stocks in the hands of jobbers and retailers is problematical but mills are understood to have cleaned up. Some mills are shipping against early contracts, others are closed down. Production for the year has been curtailed radically, so that stocks should disappear as winter advances.

Jobbers and underwear commission houses have announced deep price cuts, but in the main these have not been reflected in retail stores, where much of the blame for

the business holdup must rest. Some important dealers have been going along in the deflation; others stubbornly adhering to war-time values. A Philadelphia department store advertised a women's mercerized stocking, no features, at 75 cents a pair—$9 a dozen—while for a month previously and at the time of the sale the stocking was available at $3 a dozen.

In another store a silk and heather stocking, costing $22 at the mill, was sold at $4.50.

While these prices were being obtained in Philadelphia, men in Chicago were enabled to buy two pairs of 176 needle half hose for a quarter, and 16 pound cotton union suits were being featured in special sales at a dollar per garment, equivalent to a dollar or more less per dozen than the lowest price named by mills at any time in 1920.

Many retailers have commended the trade letter of the Young, Smyth Field Co., Philadelphia, one of the leading jobbers, who minced no words in taking retailers to task. Others resent the strictures on the retailers. One paragraph from the trade letter to which a few retailers took exception read:

The public feels, and not without reason, that they should be getting some immediate benefit from the drop in prices that they read of in every paper. Not a day passes that they are not told of a further reduction in woolens, cottons, leather or wheat, but so far as they themselves are concerned, prices seem just about the same.

With jobbers wanting goods, manufacturers wanting business and factory help wanting employment, and with capital and raw materials in abundance, the textile market situation has been unique but easily explained, as to the consumer's attitude—retailers refused to bring their prices down to levels which the consumer knew had been reached among the mills and jobbers, to conform to prices being paid to farmers for cotton and wool.

## The Wage Situation.

In common with employers in probably every line of endeavor, knitting manufacturers are giving serious attention to prospective wage scales, which in the main, it appears, are to be revised downward considerably from the scales in effect when industry halted for a rest.

The most drastic cut yet heard was by a Massachusetts mill, some of whose operatives have returned to work at a reduction of about 33 per cent, on certain operations.

The reductions in Philadelphia range from 20 to 25 per cent. While only a few mills have offered idle employees work at reductions, it is ascertained that in most instances the cuts have been accepted as logical—as necessary as were the advances when the cost of living was increasing and employers were bidding against each other for help, granting almost any wage the help demanded. Now help is wanting work at almost any wage, within reason, that manufacturers are able to pay.

A hosiery mill some weeks ago proposed to employees that they return to work at a 15 per cent wage cut. A majority was willing; enough declined to keep the mill closed. Quite recently the management announced that on a given date operations would be resumed at a 25 per cent reduction. Ninety-eight per cent of the help reported for duty. Those who did not do so at the time applied elsewhere for work, but there were no vacant jobs to be found, and they returned to their former employer, who by that time had filled their places.

It is understood that in the underwear trade reductions will be about equal to those in hosiery. The question there will be decided when jobbers begin to buy underwear for spring and mills resume on orders. Just now no orders of moment are being taken, manufacturers being more interested for the moment in prospective business than in prospective wage scales, feeling there will be no lack of help at wages it may be possible to pay—regulated by prices jobbers will be willing to pay.

In some sections of New York State where much of the heavy weight underwear is made manufacturers have succeeded in abolishing the closed shop, workers acquiescing after a long stubborn fight which they lost because the sentiment of the communities was in favor of the open shop.

The open shop probably will prevail in the knitting industry in Philadelphia, where a powerful movement against the closed shop has been waged by civic organizations. The need for the open shop was shown recently when hosiery boarders who had accepted a reduced wage were to have been called out by their union. Rather than invite a strike, the management closed the mill, leaving in idleness several hundred operatives because a half dozen unionized boarders were to be subjected to union domination. It was assumed the help willing to work would go out on a sympathy strike, lest they be picketed by the union and be made a target for "scab" accusation. The mill in question has notified the boarders that when it resumes their places will be filled with persons not subject to the call of the walking delegate.

The open shop received a tremendous boost at a recent meeting of the manufacturers' association of West Philadelphia, addressed by E. J. McCone, general manager of the Buffalo (N. Y.) Commercial, one of the few metropolitan dailies, Mr. McCone said, not in the grip of the union. In every large daily newspaper establishment, with a very few exceptions, he said, there is a man in overalls representing the union who can be looked on in the light only of a censor. "Not one of several hundred newspapers that I will mention," he added, "has dared in the last year or two to print an editorial opposing the closed shop, and if any editor or manager wants to dispute this assertion I will be willing to meet him in public debate, anywhere, at any time. I will write my check for $5000 to the order of any charity any person present may nominate if you will show me in either of the several hundred dailies that I will mention an editorial antagonistic to the closed shop, in the last year."

Mr. McCone told the meeting he had laid his representations in relation to the attitude of the newspapers and the extent to which they are "sewed up" before a Senate Committee, and he asserted that the seditious utterances of that part of the public press often complained of can be suppressed without the aid of legislation if the union will call off the restrictions on closed shop antagonism.

His newspaper, he stated, is one of the few that maintains the absolutely open shop. Its printers are paid the union scale, but are not restricted in their earnings, and he mentioned a girl of 19 who, while the limit of the union in Buffalo is $42 a week, earns more than twice that sum each week.

"With the open shop it may not be necessary to mate-

ALWAYS FIRST WITH THE LATEST

# BANNER

ALWAYS FIRST WITH THE LATEST

## FULL AUTOMATIC

# HOSIERY MACHINES

SIMPLICITY — SPEED — PRODUCTION — QUALITY

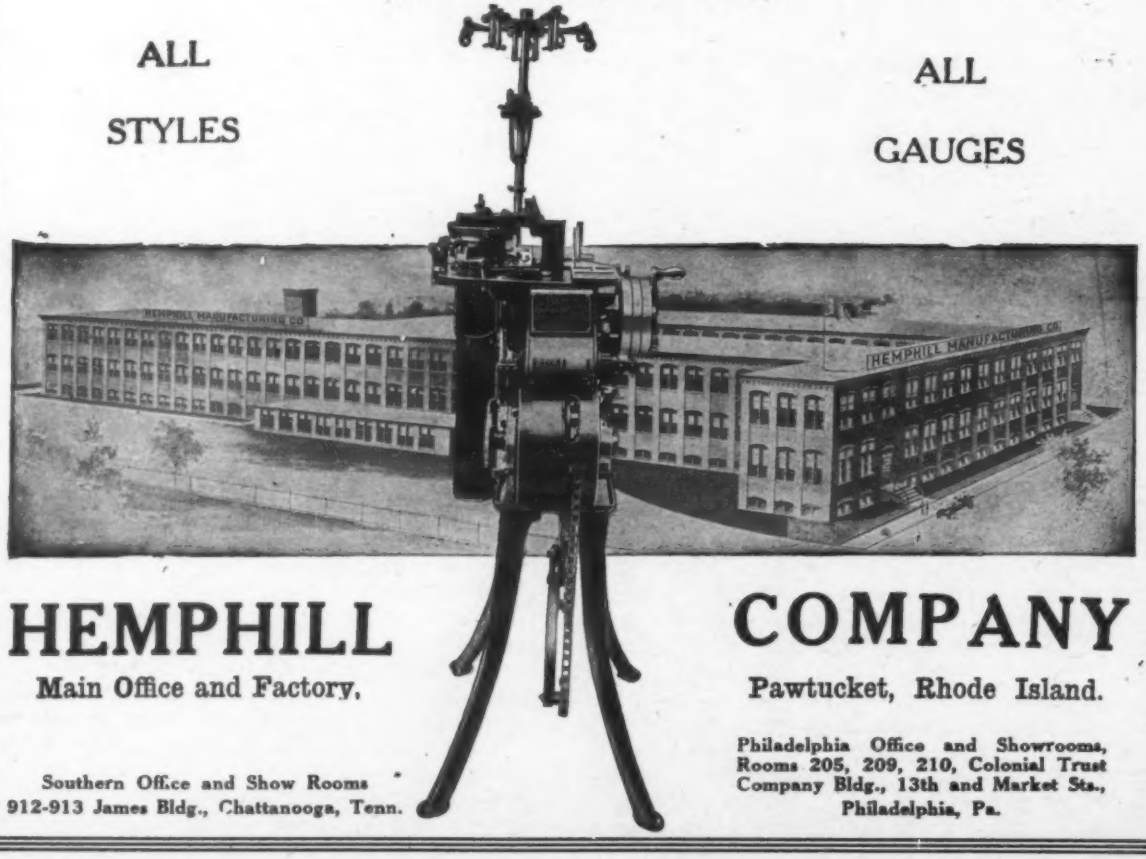
Four important things to consider when buying Hosiery Machinery.

ALL PARTS ACCESSIBLE FROM FRONT OF MACHINE

Write for descriptive catalog

ALL STYLES

ALL GAUGES




## HEMPHILL COMPANY

**Main Office and Factory,**

**Pawtucket, Rhode Island.**

**Southern Office and Show Rooms**
**912-913 James Bldg., Chattanooga, Tenn.**

**Philadelphia Office and Showrooms,**
**Rooms 205, 209, 210, Colonial Trust Company Bldg., 13th and Market Sts.,**
**Philadelphia, Pa.**

rially reduce wages," Mr. McCone said, "as workers will show approximately maximum efficiency and cost of producing will be so reduced as to compensate for continuing, to some extent, present wage scales.'

His arraignment of the closed shop, which he regarded the greatest menace by which the country is confronted, was the most scathing ever heard in Philadelphia, where he spoke under the auspices of the Industrial Relations Committee of the Chamber of Commerce. "The closed shop," he pointed out, "is more than a menace if it be permitted to dominate the policy of the press on any one phase of the country's economic and industrial problems."

Industrial Philadelphia delivered another smashing blow at the closed shop on the evening of November 22, when ex-United States Senator George Wilder Cartwright was the speaker, and in view of the recent activities in behalf of and the type and forcefulness of advocates of the open shop, it does not seem likely much of the city will remain in the grip of the walking delegate.

## Among the Knitting Mills.

An analysis of a directory showing of the knitting mills added in the last fiscal year to the country's industrial establishments discloses that there were started and projected 164 hosiery mills, of which 57 are in nine southern states, where also there is shown an increase of three underwear mills. These new hosiery mills shown by the directory are, in Alabama, four; Georgia, six; Louisiana and South Carolina, one each; North Carolina, 24; Tennessee, 17, and Virginia, four. Two of the new underwear mills recorded are in Kentucky and one is in Tennessee.

The total for all knitting mills is approximately 425, of which 125, practically all sweater establishments, are in Brooklyn, N. Y., the largest sweater producing city in the United States. Pennsylvania is shown as having added 94 mills, of which there are in Philadelphia 30 hosiery and 16 underwear, and in Reading 14 hosiery and 11 underwear.

The growth of the industry in the Central West was very light. In the four states of Illinois, Michigan, Ohio and Wisconsin there were added 18 hosiery, nine underwear and three sweater mills, a total of 30, as against 40 in New Jersey alone, the latter state having 28 new hosiery mills and 12 classified as underwear. The totals for the United States are: hosiery, 164; underwear, 50; sweater, 152; bathing suits, 19; gloves and mittens, 7; knitted cloth, 29; knitted neckwear, 5.

The figures are slightly inaccurate from the fact that perhaps 50 mills are shown as making both underwear and hosiery, or both in conjunction with sweaters, but they are significant as showing the very great expansion in the knitting industry in a period during more than one-half of which there was more idle machinery than in any similar period in the recollection of the oldest living mill executive.

W. B. Morrow and associates, Somerset, Ky., has had plans prepared for the erection of a new mill for the manufacture of hosiery. Considerable manufacturing and mechanical equipment will be installed.

The Revere Knitting Mills, Philadelphia, Pa., have been incorporated with a capital of $25,000 to manufacture knit goods. Dr. George H. Killian is treasurer.

The Mayer Knitting Mills Co., 479 Willis Avenue, New York, manufacturer of knit goods, has filed notice of a change in name to the Margate Knitting Mills.

The Berkshire Knitting Mills, Reading, Pa., has construction under way on a large electric sign on the roof of their new plant at Wyomissing. The sign will be 21 feet high by 325 feet long, one of the largest ever constructed, and will require approximately 4,500 10-watt lamps. The inscription will read, "Berkshire Knitting Mills—Hosiery As You Like It," in letters about 10 feet high.

Silver & Rosner, Inc., New York, N. Y., has been incorporated with a capital of $15,000 to manufacture knit goods. The incorporators are E. and I. H. Rosner and H. Silver, 534 East Sixth Street.

The Knit Products Corporation, Buffalo, N. Y., has filed notice of dissolution under state laws.

William Taubel, Inc., Millville, N. J., manufacturer of hosiery, has resumed operations, having been shut down for some time, due to a strike.

The Massachusetts Knitting Mills, Boston, Mass., have filed notice of an increase in capital from $50,000 to $150,000.

The Booker Knitting Co., 22 Olean Avenue, Jersey City, N. J., has been organized by Prentiss Booker to manufacture knit goods.

E. Sutro & Sons Co., York, Pa., manufacturer of knit goods, has awarded a contract for the construction of a new one-story factory 100 x 180 feet, estimated to cost about $150,000.

Fire, Nov. 2, destroyed a portion of the plant of James Cooper & Co., Baltimore, Md., manufacturer of hosiery. The loss was not estimated.

The Mt. Penn Underwear Co., Pottstown, Pa., has been incorporated with a capital of $100,000. George W. Reiff, 62 North Hanover Street, Pottstown, is treasurer.

The Antietam Knitting Co., Hagerstown, Md., manufacturer of hosiery, etc., has recently acquired property at 147-149 South Potomac Avenue, Waynesboro, Pa., to be used for a site for a new plant. Preliminary plans for the factory are now being arranged.

The Northcliffe Knitting Mills, Brooklyn, N. Y., have been incorporated with a capital of $70,000 to manufacture knit goods. The incorporators are J. J. Lazaroe, E. Satlein and I. Fine, 375 Clifton Place.

Katterman Brothers, Hackettstown, N. J., manufacturers of knit goods, is considering plans for the erection of a new two-story mill on a local site.

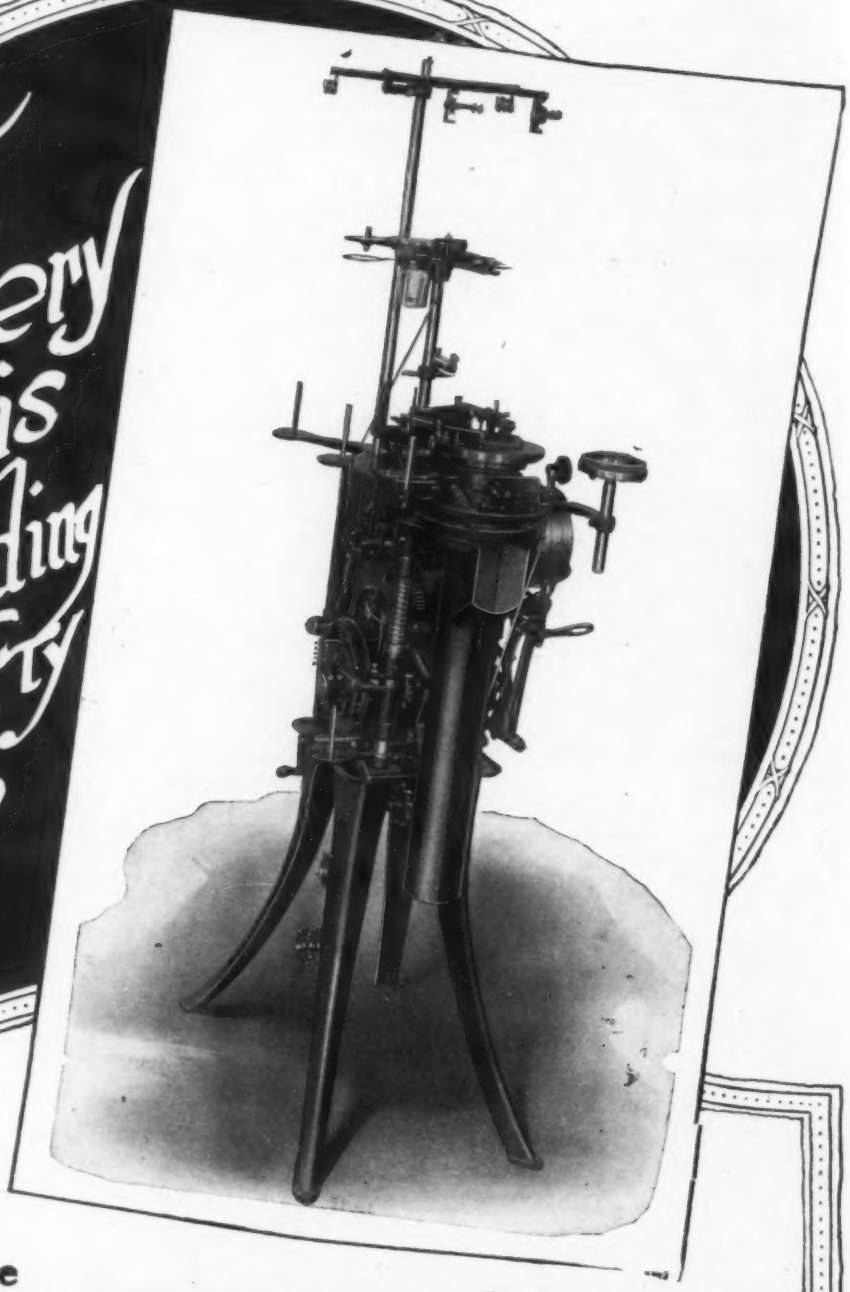
The Texas Hosiery Mills, Dallas, Tex., recently organized with a capital of $100,000 will inaugurate operations at its lately established plant at an early date and an output of 1000 dozen pairs of infants' cotton hosiery is anticipated. James C. Dobson is president and manager. W. R. Page is secretary-treasurer.

The Sieku Textile Mills, New York, N. Y., have filed notice of dissolution under state laws.

The Empire Knitting Mills, Philadelphia, Pa., have leased quarters in the Fretz Building, Tenth and Diamond Streets, aggregating about 14,000 square feet, for local works service.

The Corrigan Knitting Co., Utica, N. Y., has been incorporated with a capital of $15,000 to manufacture knit goods. The incorporators are L. L. Zimmer, L. J. Babitt and J. F. Corrigan, all of Utica.

# The Hosiery Buyer is Demanding QUALITY



## This Superior Machine Produces the Highest Quality Fabric Free From Lines

The hosiery buyers of today are demanding the highest quality they can buy,—if you can't supply them, they'll buy somewhere else.

There are different makes of knitting machines on the market, producing good fabric, but everyone knows the advantages of the spring needle machine for knitting hosiery, especially when using silk, and everyone knows that to make the finest and smoothest fabric free from any trace of imperfections it takes a WILDMAN Spring Needle Knitter.

The product of this machine finds a ready sale and a better price for the goods.

Get into this exclusive market—supply the demand for quality goods—by installing the WILDMAN Machine.

*Write today for details.*

WILDMAN MANUFACTURING CO., NORRISTOWN, PA.

MFG. TRADE MARK

**WILDMAN**

SPRING NEEDLE KNITTER

MFG. TRADE MARK

The Kingston Knitting Co., Boston, Mass., manufacturer of knit goods, has filed plans for the erection of a new factory at Carlton and Beacon Streets, Cambridge, estimated to cost about $140,000.

The Central Knitting Co., Wilmington, Del., has been incorporated with a capital of $100,000. The incorporators are Peter Lewicki, M. Edgenack and T. Shalgrosky, Wilmington.

The Pelham Knitting Mills, New York, N. Y., have filed notice of dissolution under state laws.

The Western Knitting Co., Rochester, Mich., has declared its regular quarterly dividend of 50 cents a share, payable November 25 to stock record November 5.

The Art-Knit Hosiery Co., Philadelphia, Pa., has been organized by P. Murray, 921 South Fifth Street, to manufacture hosiery.

The Sexton Manufacturing Co., Fairfield, Ill., manufacturer of knit goods, is having plans prepared for the erection of a new addition at its mills. It will be two-story and is estimated to cost about $50,000.

The New England Hosiery Manufacturing Co., Inc., Fall River, Mass., has been incorporated with a capital of $10,000. The incorporators are H. W. Shimelocive, D. R. Remick and James M. Ainsworth, Fall River.

James McNamee, Inc., Amsterdam, N. Y., manufacturer of knit goods, has acquired property on Brandt Place, in the vicinity of its local plant and it is understood plans will be prepared at a later date for the erection of an addition for increased manufacturing facilities.

The True Shape Hosiery Co., Chicago, Ill., has been organized to manufacture knit goods. Ernest Blood, 241 West Van Buren Street, is president.

The Muskegon Knitting Co., Muskegon, Mich., has moved its plant to Pentwater, where operations will be resumed at an early date. Considerable machinery has been installed.

Norfolk Knitting Mills, Inc., have moved their machinery and equipment from Norfolk, Va., to Littleton, N. H., and will continue business under the same firm name. H. W. Camp is secretary.

## An Effort at Cost Finding.

A half dozen Philadelphia hosiery manufacturers have formed a "Cost Comparison Group," the object of which is to have the members meet as occasion may arise to make revisions and go deeper in the field of cost accounting without the services of the cost accountant.

Each member, at every meeting, is to submit his cost sheet, showing the estimated cost for every operation in the manufacture and distribution of hosiery. It is assumed that at the first meeting, December 2, these sheets will show wide variations, which are to be accounted for to the satisfaction of the group, in the expectation that after a few assemblies the half dozen manufacturers will have reduced cost ascertainment to an absolute science. Considerable attention is to be given to the matter of overhead, a term so broad that it admits so many constructions as to make it confusing and not trustworthy.

The cost sheet of one manufacturer in the group shows a charge of a given sum for water used in dyeing, the water cost being 8 cents per 1000 gallons. The sheet of another makes no mention of even so popular an article as water. On one operation there is a difference of 38 per cent in the cost shown by one manufacturer in comparison with the estimate of another. It is expected these variations will be quite conspicuous when the cost sheets of manufacturers widely scattered come to be compared, and for this reason the Philadelphia group suggests that manufacturers in various sections organize groups, to be comprised of not more than a half dozen members each. They hold that there will be a larger per cent of concentration and less circumlocution to be overcome in arriving at precise cost. Eventually, it has been suggested, the various groups compare notes, so that ultimately the hosiery industry will have evolved a worth while cost finding method applicable to manufacturers individually or by groups, regardless of where they may be operating.

## Pennsylvania Knitters Meet at Reading.

The principle of the Golden Rule as among employers and as between employer and employee, which prevails among the knitting manufacturers of nine southern states, was made the policy of the Eastern Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers at a meeting in Reading attended by nearly 100 manufacturers and mill representatives, and the declaration of principles embodying the Golden Rule, as adapted to the knitting industry in the South by Champe S. Andrews, Cotton States Hosiery Mills, Chattanooga, Tenn., was numerously signed, upon a call from W. R. Wetherhold, Berks Knitting Co., president of the Division.

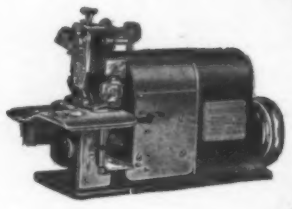
The outstanding features of the meeting were reports from manufacturers indicating continued widespread idleness among hosiery and underwear mills in Pennsylvania and the explanation of a leading retail merchant for the reluctance of retailers as a class to buy knitted goods. "Until you can give us some assurance there will not be a dumping of foreign-made goods on American markets," said Mr. Pomeroy, of Dives, Pomeroy & Stewart, one of the speakers of the afternoon, "the average retailer may not have strong confidence in the domestic goods market."

Mr. Pomeroy stated that the John Wanamaker stores not long ago acquired considerable hosiery brought in from Germany and landed in New York at very low prices. "The Wanamaker stores," he added, "after selecting such numbers as interested the buyers, offered the remainder to other retail establishments. Some was offered to Dives, Pomeroy & Stewart, but we took none of it, and will buy no German goods until our customers tell us they can get the imported articles in the stores of our competitors," said the speaker.

The import problem was only one of a number confronting the retailer, who will have to solve for himself as many complex puzzles as will be presented to the manufacturer and jobber, Mr. Pomeroy continued. He saw good, steady business in the making, but was not prepared to forecast the end of the period of demoralization.

Many retailers have reduced prices, the speaker said, but there was no reference to the prices in effect at the time reductions were announced. He mentioned one large retail store which had made cuts of 20 to 35 per cent. The same store, it was pointed out subsequently, during the week preceding that in which Mr. Pomeroy spoke advertised a women's mercerized stocking at 75 cents a pair—

# MERROW



## HIGH SPEED OVERSEAMING OVEREDGING and SHELL STITCH MACHINES

FOR Seaming, Hemming and Edging all kinds of knitted and woven fabrics, MERROW Machines will prove to you just what they have proved for other mills —that they are the utmost in efficiency.

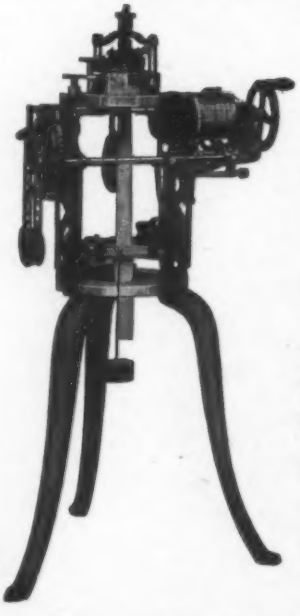
Are you MERROWise? If not, get wise today and start MERROWing toward Maximum Production, Minimum Expense and Unexcelled Quality of Work.

*Write today for full data.*

**The Merrow Machine Co., 16 Laurel St., Hartford, Conn.**

ESTABLISHED 1838

## H. BRINTON CO.



Builders of

*Circular Knitting Machinery*

of every kind for every purpose

Hosiery Ribbers with the very latest attachments

Full Automatic Hosiery Footers

Body Machines

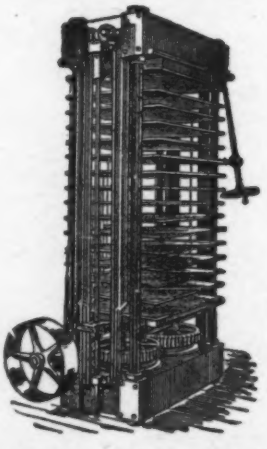
Sleevers, Etc.

for Underwear, Sweaters, Toques, etc.

*Write for Catalog, Prices and Samples*

213-217 Race Street, PHILADELPHIA, PA.

Canadian Agent: Hartley Kay, Ltd., Georgetown, Ont.



## RELIANCE

Hot Plate Screw Press

FOR

Hosiery and Underwear

Write for Catalog and Prices

**Reliance Machine Works**

FRANKFORD, PHILA.

$9 a dozen—whereas the identical stocking recently has been bought by jobbers at $3.50 and less per dozen.

The manufacturer has made the retailer "the goat," Mr. Pomeroy went on, "and has placed him on the defensive." Continuing the reasons for the retailer's hesitancy to buy, he said the average store, in order to be provided against such contingencies as those arising from transportation conditions, were required to carry from 30 to 80 per cent more stock than normally, to do 20 per cent more business. Just now, he continued, the retailer is figuring on how he can reduce this surplus stock which he was forced to carry, and bought at a time when manufacturers and jobbers were telling of scarcity and higher prices.

The knit goods market, he thought, was in something of the condition of a person after overeating—suffering from indigestion. "It will have to digest the excess of what was absorbed before it can take more."

None of the hosiery manufacturers at the meeting has sold for spring, and a poll of mills disclosed an average period of eight to ten weeks idleness since the first of July. Where there is not complete stoppage mills are being operated from two to four days a week.

Several of the light weight underwear mills reported having sold a few hundred cases of goods for spring, at prices about where they were at the opening in 1919, which is equivalent to saying that, unless there be downward revisions, underwear will go over the counter in the spring and summer of 1921 at about the prices paid by consumers during the 1920 season.

Underwear prices, manufacturers stated, were based on today's low quotations on yarns and wage scales as they existed six months ago. One mill reported having been given a quotation on paper boxes 20 per cent under the recent schedule of prices. Otherwise, with the exception of yarn, there has been no decline in the cost of anything entering into the manufacture of knitted goods. Yet it was a question whether prices had reached the bottom on present operating costs. This was one of several questions on which there was a division of opinion.

Practically all agreed that jobbers were not interested in merchandise offered at mill cost, and that their reluctance to operate was due to the absence of price stability.

"Do you guarantee your prices against declines?" was one of a number of questions submitted to the manufacturers. As there was not a single reply Chairman Wetherhold admitted it probably was true that a majority had indulged jobbers, to get a little business.

A letter from a leading manufacturer of both hosiery and underwear who was unavoidably absent was read, stating jobbers were asking for extraordinary concessions in the way of dating, etc., and assumed there were large stocks in mills. Following the reading of the letter the following recommendations were adopted:

I. That all textile manufacturers give their support individually and collectively to the national movement for the adoption of a universal form of contract between buyers and sellers; and we further recommend that every knitting manufacturer be called upon, through the National Association of Hosiery and Underwear Manufacturers, and other associations in the knit goods manufacturing trades, to not permit arbitrary cancellation of orders, and to not accept return of merchandise as a means for evading obligations in a declining market, or under other circumstances.

2. That the National Association of Hosiery and Underwear Manufacturers cooperate in the most effective manner possible with the National Association of Knit Goods Selling Agents in the movement for the absolute adoption of the sales basis of f. o. b. mill for all sales, and no freight or cartage allowance.

The national movement referred to in the first recommendation was initiated by the Cotton Yarn Merchants' Association of Philadelphia and has attracted to it the support of the leading textile trades associations. The inspiration for the project doubtless was the number of cancellations offered to spinners and yarn commission houses by some of the smaller knitting mills which had been seriously affected by cancellations from jobbers and retailers. This possibly accounts for the half-hearted support given to the recommendations in the Reading meeting.

According to a compilation by a federal reserve bank in the district in which eastern Pennsylvania is embraced, retailers reporting to the bank increased their volume of business 23 per cent in July, 22 in August and 15 per cent in September, over the corresponding months of 1919, and had stocks ranging from 34 to 38 per cent greater for the three months respectively of 1920 as in contrast with the corresponding months for last year.

## A Conference on Uniform Contracts.

Knit goods manufacturers and large jobbing interests were brought together, through accredited representatives, in the first practical conference for a mutual understanding as to what shall constitute a contract and how disputes arising under a contract shall be disposed of, in a meeting of seventy or more persons at the Arkwright Club, New York, on November 17, arranged for by the National Association of Knit Goods Selling Agents. Interest in and the scope of the movement then inaugurated is shown in the fact that there were addresses by representatives from the following:

Southern Wholesale Dry Goods Association,

National Wholesale Dry Goods Association,

National Association of Hosiery and Underwear Manufacturers,

Knit Goods Manufacturers of America,

National Association of Sweater and Knitted Textile Manufacturers,

Jobbers' Association of Knit Goods Buyers,

New York Jobbers' Knit Goods Association.

While the conference, presided over by Robert C. Wheeler, president of the National Association of Knit Goods Selling Agents, was called for dealing, primarily, with the matter of a universal form of contract and shipping f. o. b. mill, no freight or cartage allowance, the occasion was utilized by several speakers for dealing with the attitude of jobbers toward mills, the principal speaker along this line being Norman H. Johnson, Richmond, Va., secretary of the Southern Wholesale Dry Goods Association, who strongly advocated an equitable form of contract.

"Jobbers are out of the market," Mr. Johnson said, "because the manufacturers have no selling policy and therefore there is absence of confidence. Manufacturers have not shown that they have confidence, and hence jobbers do

A Very Merry Christmas and a Happy and Prosperous New Year to All.

**Charles B. Paulus**

1516 68th Avenue, Oak Lane
Philadelphia, Pa.

JOSEPH T. PEARSON & SONS CO.
MANUFACTURERS OF
BONE DRY
HOSIERY FINISHING BOARDS
THAT WORK ABSOLUTELY SMOOTH
PROMPT SERVICE—RIGHT PRICES
1815 E. Boston Avenue, Philadelphia

SOAPALITE
SAVES
SOAP
*Full particulars on inquiry of*
The Electric Smelting & Aluminum Co.
Lockport, N. Y.

GENERAL MACHINE WORKS
YORK, PA.
Manufacturers of
Circular Rib Knitting Machinery
Cylinders and Dials

50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES have been added to the "1912" Cloth Cutting, Folding and Winding Machine which add at least 50 per cent to its value to YOU.

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to more and greater profits.

THE ENORMOUS SAVING WILL INTEREST YOU.

Mail a card for complete information and prices.

When in need of special machinery, write us.

J. A. FIRSCHING, 614 Broad St., Utica, N. Y., U. S. A., Dept. "C"

not have it. If a policy were formulated by leading manufacturers others would follow, and I would suggest that it be outlined right here in New York, the source of all such trade matters. Price goods on cost plus a fair profit and have the price stick where the manufacturers puts it, and the jobber will buy goods.

"It often has seemed to me," Mr. Johnson continued, "that after a manufacture has named a price he is afraid it will be accepted, and that if it be accepted he is afraid he is going to lose money. Such an attitude, plainly apparent to buyers, does not inspire confidence. Stagnation is due to lack of policy."

Mr. Johnson, criticizing manufacturers who, he said, had not lived up to contracts as religiously as they expect buyers to observe their obligations, admitted there also were jobbers who have offended. But with these he dealt more leniently than with the manufacturer. "Where formerly it was 'the jobber be damned' it now is 'the jobber be pleased,'" he said.

The speaker complimented the knit goods trade for its general poise throughout the long period of depression and for not having given way to panic.

Speaking for the National Association of Hosiery and Underwear Manufacturers, R. L. P. Reifsneider said his organization was pledged to f .o. b. mill and a universal form of equitable contract. Between the better class of mills and the better class of jobbers, he said, there have arisen few controversies that could not be adjusted amicably and with minimum friction. But there is another class, he continued, whose evasion of obligations and wanton cancellations proves that, in addition to a binding contract, there must be the man who is willing and prepared to enforce it, at all hazard.

The better way for disposing of controversies, Mr. Reifsneider thought, lay in commercial arbitration, as so strongly advocated by Champe S. Andrews, who as chairman of a committee appointed by the National Association of Hosiery and Underwear Manufacturers has spent much time and effort in evolving a practical plan for putting commercial arbitration in effect.

A speaker for the National Association of Sweater and Knitted Textile Manufacturers feared a difficulty to be encountered would be the refusal of one party to a contract to refer a dispute to arbitrators. This would be overcome, Mr. Reifsneider thought, by adopting the suggestion of Mr. Andrews that it be definitely agreed by the parties to a sale, at the time the contract was entered into, that in the event of a dispute arising the matter be referred to arbitrators, under a plan to be decided upon by the several interests represented at the meeting, each party pledging himself and his principals to be bound by the award of arbitrators, the award to have the same effect as a judgment of a court of common pleas, and to be not subject to appeal.

Such a form of arbitration won the favor of the meeting, as was apparent from the remarks of several speakers, and it was thought probable committees would be appointed and function during the year, and report their findings to the meetings of the Jobbers' Association of Knit Goods Buyers and the Executive Board of the National Association of Hosiery and Underwear Manufacturers, in New York, on January 18.

Speaking for the Knit Goods Manufacturers of America, Frank H. Burgher, Otis Company, Ware, Mass., and Bliss, Fabyan & Co., held to the idea, without reservation, that "a sale must be made to constitute a sale," based on justice and equity. Mr. Burgher and the speaker for the National Association of Hosiery and Underwear Manufacturers stressed the importance of cooperating in the movement inaugurated in Philadelphia for concentrating the efforts of all textile interests in the project for evolving a form of contract that can be enforced, the sponsors of the movement holding, further, that no party to a contract should shirk the responsibility of enforcing it.

Voluminous correspondence which had passed between Champe S. Andrews and Ernest C. Hall, Clawson & Wilson Co., Buffalo, N. Y., president of the Jobbers' Association, was read by Secretary Henry Van Holland, the letters of each revealing a sincerity of purpose in attempts to arrive at a form of agreement covering practically all phases of a transaction, and leaving the conclusion that the two representatives of mill and distributor had reached a stage in the negotiations where it is made easily possible to proceed to an early adoption of a policy as to contracts and arbitration.

A letter from the Wolfinger Knitting Mills, Reading, Pa., which, with a number, was read to the meeting, came out strongly against cancellations, and made reference to lists of cancellors reported to the National Association of Hosiery and Underwear Manufacturers. The Wolfinger mills also stand for shipping f. o. b. mill, a policy which, it was stated by a speaker, was adopted by his organization by a majority greater than that at any national election.

Thomas J. Fernley appeared for the Jobbers' Association, of which he is secretary, and for the National Wholesale Dry Goods Association. Mr. Fernley reported the most flagrant abuses by retailers, some of whom, to escape becoming involved in a controversy over rebates, simply returned merchandise arbitrarily. The jobbers, Mr. Fernley said, have taken a definite stand in antagonism of these abuses. While the speaker was friendly to arbitration or any form of contract for correcting abuses, he was not authorized, he said, to bind his organizations, both of which, however, may be said to be desirous of cooperating, once a definite policy has been outlined.

The associations represented at the conference which have not already named committees for carrying out its objects, are expected to do so with little delay, in order that the work begun at the meeting can be finished early in 1921.

---

Wildman Manufacturing Company, Norristown, Pa., has issued a 32-page instruction book on the Wildman Spring Needle Body Machine. This is illustrated and contains complete authentic instructions regarding this machine. The results of an expert and complete study of cam curvature and needle control combined with an efficient presser system, says the book, have served in the Wildman spring needle body machine to eliminate former defects in the use of spring needles and to gain by their use the dual advantage of finer knit fabric and greater smoothness of texture. The accurate adjustments needed for the successful operation of the spring needle machine are readily obtained by means of graduated adjusting screws, which regulate all cam movements.

# JOHN D. LEWIS

Manufac turer of

Logwood, Cutch, and Other Dyewood Extracts

**TANNIC ACID**

Main Office
1209 Turk's Head Bldg.

PROVIDENCE, R. I.

Works
Charles & Bark Sts.

*BRANCH OFFICE:*

NEW YORK, N. Y.
2-4-6 Cliff St.

PHILADELPHIA, PA.
583 Drexel Bldg.

BOSTON, MASS.
Old South Bldg.

## E. S. DRAPER

CHARLOTTE, NORTH CAROLINA

LANDSCAPE ARCHITECT AND CITY PLANNER

PREPARATION OF ILLUSTRATED REPORTS EMBODYING SUGGESTIONS FOR GENERAL MILL VILLAGE IMPROVEMENT AND IMPROVEMENT PROGRAMS TO GOVERN ANNUAL BUDGETS.

MILL VILLAGE DEVELOPMENT

## Bradley Stencil Machine

The Bradley Stencil Machine makes Stencils in half a minute at reduced cost of 1-10c each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Oil Paper, Stencil Paper and Inks.
Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 35c or $3.50 per doz. Manufacturers of Oil Stencil Papers.

*Write for Prices and Samples*

A. J. BRADLEY MFG. CO.
99 Beekman Street NEW YORK

## The Walke Box Company, Inc.

NORFOLK, VA.

*Manufacturers of*

NORTH CAROLINA PINE BOX SHOOKS

## WILLIAM ISELIN & CO.

COMMISSION MERCHANTS
—COTTON GOODS DEPARTMENT—
18 and 20 Thomas Street
NEW YORK

## CARVER-BEAVER YARN CO.

Successors to A. D. SALKELD & BRO., Inc.

ALL NUMBERS COTTON MERINO **YARNS** ALL COLORS WOOL WORSTED

366 BROADWAY, NEW YORK

## AUGUSTA MILL SUPPLY CO.

Textile Machinery
General Mill Supplies
Transmission and Power Apparatus

429 JACKSON ST. AUGUSTA, GA.

**COTTON—WOOL—SILK**
**DYED or BLEACHED in SKEIN**

Fast to Bleaching. Delivered in Skein or Tube.
PROMPT DELIVERIES—RIGHT PRICE
Backed by 18 Years Experience.
Same yardage delivered as received. COUNT YOUR SKEINS.
Your Patronage Solicited.
**HABERSHAM KING, JR.**
Plant: 4-6 North Butler St., Atlanta, Ga.

ADVERTISING is an economy and cuts the cost of selling, making lower prices or better goods possible without sacrifice of the sellers' profits.

# The Yarn Market

While the process of deflation in cotton yarns continues throughout the New England textile centers, the period of annual inventories is at hand and many of the trade believe that the advent of the new year will see the dawn of a new era of business on the readjusted basis of lower levels. Retailers continue to hold to high prices on goods now in stock, despite limited buying by the ultimate consumer. Such stocks are hoped to be greatly reduced through holiday buying, paving the way for replacement at lower cost. Clearance sales, an annual January event in the large city stores, are expected to be resultant of moving any surplus of present stocks not disposed of before Christmas. The mills, already handicapped by losses incurred through revised values, are buying even lighter than in recent weeks. Inventories are being taken and stocks revalued in accordance with present lower prices.

Yarn prices in this section have fallen off still further during the past month until on some counts they are now almost half of what they were a year ago. Quotations are most erratic, reflecting the chaotic conditions of the market with barometric accuracy. Figures in the following table are representative of the average spinners' asking rate, but considerably lower figures are accepted in many instances, more especially when distressed lots are disposed of where liquidation is forced. On Southern single carded cones, 40 cents is asked for 20s, 42 cents for 22s, 45 cents for 24s, and 50 cents for 30s. Sales have been made however from three to four cents lower. In the case of northern carded yarns, four to six cents under asking prices have recently been accepted.

Operating schedules have been further reduced in New England mills, and many are now shut down completely. The unemployment situation is fast assuming serious proportions and in some cases operatives have asked that wages be reduced if such action would insure them of steady full time work. In Rhode Island the return of the 54-hour week has been noted, some of the mills running on that schedule three or four days a week and at least one mill steadily. Some manufacturers plan to operate on a 54 hour basis permanently when normal conditions return, that being their only chance to keep down the cost of production and provide steady work to operatives, it is understood. Fall River, Mass., stands alone at this writing in the continuance of present wages. While mills in that city are running on short time like those of other New England textile centers, the manufacturers have announced that no cuts will be made in wages at the expiration of the present working agreement period early in December. As these working agreements are made for six month periods, it is not considered likely that reduced wages will be seen in Fall River before next June.

Effects of the business depression in yarns and manufactured goods in New England is seen in the light receipts of cotton at the five principal textile manufacturing cities of the section. The cities are New Bedford, Fall River, Lowell, Lawrence and Manchester. Receipts during the first three months of the new cotton season have been so light that records of a decade have been broken in some cases, despite the abnormally low mill stocks of cotton at the opening of the season August 1. Less than 175,000 bales of raw cotton have come into New England during August, September and October, whereas there is usually at least 220,000 bales during those months. Total receipts for the three months of 1920 were 166,601 bales, against 224,773 in the corresponding period of 1919, and 220,441 in 1918.

Another vivid illustration of business depression in the textile field is the appeal of New England textile interests to the U. S. Treasury Department for an extension of time to pay the final installment of income and excess profit taxes, due Dec. 15. The appeal is made on the strength of the slump in business and is accompanied with the statement that serious financial difficulties will be encountered if the payment is required on time. In fact some of the concerns, it is claimed, will be forced dangerously near to bankruptcy if an extension of time is denied. Federal officials can not grant the request, however, without approval of Congress. Action by the latter body remains to be taken.

Meanwhile efforts are being made to prevent recurence of the widespread cancellations that marked the begining of the present era of business dullness. Cotton yarn dealers have formed the Yarn Dealers' Association, for the purpose of collecting credit data upon which its members may gauge future bookings. A complete list of all concerns that buy cotton or silk yarns is to be prepared with definite information concerning their past transactions. Those who cancelled orders without just cause are to be listed and members of the association are not to deal with them in the future without satisfactory assurance that future orders are to be bona fide and that they intend to accept the goods.

Electrical goods yarn, which has been the "one bright spot of the cotton yarn market" has now followed the example of the regular yarns such as hosiery and underwear numbers. In fact there is no longer business in these yarns and deliveries of contract yarn are no longer insisted upon with the impatience marking recent weeks. The dullness of the tire trade and subsequent inactivity of fabric yarns has released quantities of Egyptian and Sea Island cotton for the thread yarn trade. This trade remained active longer than the usual lines, prices of thread yarns in October being $3.44. November saw the thread business affected, however, and recent quotations for thread yarns were back to $2.25, the basis early in January, 1919. Carpet yarns are down to 26 cents against 66 in February of this year. Fine combed peeler 40/2-ply yarn which was $2.60 in February, 1920, has declined to 80 and 85 cents, while 40/2-ply carded peeler is 68 and 70 against $2.25 in April of this year. Southern underwear or hosiery yarns, 10 singles, are 35 cents against 70 cents in January, 1920. The scarcity of fine yarns with heavy demand was followed by strong reaction, when public opposition to high prices became effective and manufacturers overestimated the demand when the depression became general.

Current prices of representative numbers used in New England with comparisons a year ago follow:

# DOBBINS SOAP MFG. CO.

**PHILADELPHIA**

**For over half a century makers of high grade Soaps and Scouring Materials for Textile Manufacturers**

## AMERICAN TEXTILE BANDING CO.

(INCORPORATED)

MANUFACTURERS OF

## AMTEX

Spinning and Twisting Tapes---Double Loop Bands
Heavy Cotton Webbing for Light Belting and Harness
Leader Tapes for Bleacheries

PHILADELPHIA, PA.

Main Office and Mill:
Belfield Ave. and Wister St., Germantown

Treasurer's Office:
23 South Second Street

CONNECTIONS AND SERVICE, 37 PRINCIPAL CITIES

## WALTER GREGORY & GREGORY

ACCOUNTANTS—AUDITORS

214 Atlanta National Bank Bldg. Atlanta, Ga.

Special Income Tax Service—Washington, D. C.

**$10.00 YEARLY BULLETIN SERVICE**—Bulletins covering all future reports relevant to 1920 and 1921 Federal Income and Excess Profit Taxes as offered for publication by the Treasury Department.
**$25.00 YEARLY BULLETIN SERVICE**—Bulletins covering all future reports relevant to 1920 and 1921 Federal Income and Excess Profit Taxes as offered for publication by the Treasury Department. Comprehensive interpretation of Treasury Rulings. Reasonable consultation privileges on subjects related to above Bulletins.

*Practice Limited to Auditing and Federal Income and Excess Profit Tax Review and Preparation.*

96 Varieties Box Strapping and Baling Ties

Shipper's Supplies

## TRUCKS

Manufacturers
Double Diamond
Cotton Mill Stake Trucks
J. R. REGNAS & COMPANY
ATLANTA, GEORGIA

**Southern Single Carded Cones.**

| Grades | Current Prices. | Year Ago. |
|---|---|---|
| 10s | 35c | 66@ 67 |
| 12s | 36c | 67@ 68 |
| 14s | 37c | 69@ 70 |
| 16s | 38c | 74 |
| 18s | 39c | 75 |
| 20s | 40c | 76@ 77 |
| 22s | 42c | 77 |
| 24s | 45c | 78 |
| 30s | 50c | 83@ 85 |
| 40s | 70c | 1.15 |

**Weaving Yarns—Warp Twist.**

| | | |
|---|---|---|
| 10-2 | 38c | 70 |
| 12-2 | 38c | 72 |
| 14-2 | 39c | 74 |
| 16-2 | 39c | 76 |
| 20-2 | 40c | 88@ 90 |
| 24-2 | 43c | 95@ 96 |
| 30-2 | 48c | 1.10 |
| 36-2 | 65c | 1.20 |
| 40-2 | 70c | 1.25@1.28 |

**Northern Carded.**

| | | |
|---|---|---|
| 10-1 | 40c | 70 |
| 16-1 | 44c | 74@ 75 |
| 20-1 | 45c | 76 |
| 26-1 | 51c | 80 |
| 30-1 | 52c | 85@ 86 |
| 40-1 | 70c | 1.16@1.18 |

**Northern Combed.**

| | | |
|---|---|---|
| 10-1 | 64c | 1.02 |
| 16-1 | 66c | 1.06@1.07 |
| 18-1 | 67c | 1.07@1.08 |
| 20-1 | 69c | 1.08@1.10 |
| 26-1 | 73c | 1.13@1.15 |
| 30-1 | 77c | 1.25@1.28 |
| 36-1 | 85c | 1.35@1.36 |
| 40-1 | 90c | 1.40 |

---

The immediate post-election recovery for which some factors seemed to hope failed to materialize in the Philadelphia cotton yarn market, and as the first week of November closed, the edge was obviously off the expectancy noted in this market just prior to the election. Despite the Republican victory, it appeared that much of the optimism was premature, as cotton yarns in general did not move so freely during this first week as they did in the preceding period, when sales records were not threatened by any means. This did not surprise those in touch with conditions however. Reports throughout the month indicate that the dullness was continued throughout the month; one or two houses reported doing a moderate business, it is true, but at the expense of values, while most of the other dealers had nothing better to handle than a few scattering sales of small lots.

Some price slumps continued to occur. Lower prices were reported for some of the coarse and medium counts of southern carded skeins, warps and cones.

The second week witnessed little change in the situation. While it was true that some counts seemed to be holding their own during this period, thus giving the price list a greater appearance of stability, this seemed to be only a "breathing spell" that did not preclude further declines. While some certain counts eased off in price, notably southern carded skeins, price cuts during the first part of the month were of unimportance. Various explanations were offered to account for this. Some factors presented the illogical explanation that cotton yarns had definitely arrived at the bottom. Other factors said the absence of any marked changes in the prices of the list was due to the fact that the decline in October was too fast, and that yarns outran both cotton and fabrics in extent of deflation. Others expressed the opinion that the matter was very largely dependent upon the course of cotton prices.

That there was still room for a slump in prices was indicated by the action of a number of the counts which gave way to further recessions in the third week of the month. Single carded skeins and warps brought lower prices as did other sections of the list. Coarser carded numbers fell five cents a pound in the week, this recession applying to knitting as well as weaving yarns. The carded section of the list in general appeared to have yielded generally about a cent a pound or more. Lower prices were not reported during this period on the combed section of the list, as relatively few sales were reported.

The market as a whole for the third week showed practically no improvement. Although there were a few inquiries for very small lots, they led to no real business.

Spinners seem anxious, at this writing, for new contracts at a reasonable price but most of them are unwilling to take orders at present on a basis lower than actual cost. Eastern mills, however, seem to be averse to quoting figures only to have them turned down, and while they too are anxious for business, they are generally not naming their rock bottom prices except in cases where there seems a real prospect of business being placed.

Recent Philadelphia quotations follow:

**Southern Single Skeins.**

| | | | |
|---|---|---|---|
| 4s to 8s | 30 | 10s | 31 |
| 12s | 32 | 14s | 33 |
| 16s | 34 | 20s | 35 |
| 24s | 39 | 26s | 41 |
| 30s | 43 | | |

**Southern Single Warps.**

| | | | |
|---|---|---|---|
| 8s | 31 | 10s | 32 |
| 12s | 33 | 14s | 34 |
| 16s | 35 | 20s | 36 |
| 26s | 41 | 30s | 43 |
| 40s | 52 | | |

**Carded and Upholstery Yarns in Skeins.**

| | |
|---|---|
| 8-3-4 slack | 28 |
| 9-1-4 slack | 28 |
| 8-3-4 tinged tubes | 25 |
| 8-3-4 hard white warp twist | 28 |
| 8-3-4 hard twist waste | 25 |

**Southern Two-Ply Skeins.**

| | | | |
|---|---|---|---|
| 8s | 31 | 10s | 32 |
| 12s | 33 | 14s | 34 |
| 16s | 35 | 30s | 36 |
| 24s | 39 | 26s | 40 |
| 30s | 43 | 40s | 52 |

**Southern Two-Ply Warps.**

| | | | |
|---|---|---|---|
| 8s | 31 | 10s | 32 |
| 12s | 33 | 14s | 34 |
| 16s | 35 | 20s | 36 |
| 24s | 39 | 26s | 41 |
| 30s | 43 | 40s | 52 |

**Southern Two-Ply Combed Peeler Skeins and Warps.**

| | | | |
|---|---|---|---|
| 20s | 65 | 24s | 67 |
| 30s | 70 | 40s | 75 |
| 50s | 80 | 60s | 90 |
| 70s | $1.00 | 80s | $1.25 |

**Southern Frame Spun Carded Yarn on Cones.**

| | | | |
|---|---|---|---|
| 8s | 30 | 10s | 31 |
| 12s | 32 | 14s | 33 |
| 16s | 34 | 18s | 35 |
| 20s | 36 | 22s | 37 |
| 24s | 38 | 26s | 39 |
| 30s | 42 | 40s | 52 |
| 30s tying-in | | | 40 |
| 30s double carded | | | 45 |

**Northern Mule Spun Carded Yarn Cones.**

| | | | |
|---|---|---|---|
| 10s | 38 | 12s | 39 |
| 14s | 40 | 16s | 41 |
| 18s | 42 | 20s | 43 |
| 24s | 46 | 26s | 47 |
| 30s | 50 | 40s | 60 |

**Northern Mule Spun Combed Peeler Yarn on Cones.**

| | | | |
|---|---|---|---|
| 10s | 58 | 12s | 60 |
| 14s | 61 | 16s | 62 |
| 18s | 63 | 20s | 65 |
| 22s | 67 | 26s | 70 |
| 28s | 71 | 30s | 80 |
| 38s | 82 | 40s | 85 |

---

Mills not having their own dyeing and bleaching plant and which have their yarns dyed or bleached at plants not included in their own facilities will be interested in the plant recently established by Habersham King, Jr., at 4 and 6 North Butler St., Atlanta, for that purpose. Mr. King has had eighteen years experience in this line, and has now started a plant for high-class dyeing and bleaching in the skein of cotton, wool and silk, the yarns to be delivered in skein or tube, as desired. Prompt deliveries and equal yardage is promised.

## The Knit Goods Exhibition.

The 17th Annual Knitting Arts Exhibition of the National Association of Hosiery and Underwear Manufacturers will be held in the Commercial Museum, Philadelphia, on May 2, 3, 4, 5 and 6, 1921. Indications are that the 17th Exhibition will be the greatest ever, and C. B. Carter, secretary of the association and his co-workers are busily engaged in making preparations for the Show and are now receiving reservations for exhibition space.

A unique feature of the coming Exhibition, and something that has never before been attempted, is the rearrangement of the exhibit spaces in the exhibition hall which will make every exhibit space a corner space. To do this, it is planned to have aisles running crosswise of the building, as well as lengthwise, thus insuring all exhibitors practically the same degree of prominence. This plan was devised in Secretary Carter's office and he is to be congratulated upon it.

The Annual Convention of the National Association of Hosiery and Underwear Manufacturers will be held in Philadelphia during Show Week, according to the usual custom.

It is announced that meals and luncheons and cafeteria service will be furnished in the dining room in the exhibition hall, by one of the best caterers in Philadelphia. Music will be rendered daily by one of Philadelphia's orchestral bands. The custom of a free bus service from the car lines to the exhibition hall will be maintained, as will the many other conveniences which have prevailed in previous Exhibitions.

---

The Department of Agriculture has issued Bulletin No. 882, which deals with manufacturing and laboratory tests to produce an improved cotton airplane fabric. The information furnished by this pamphlet includes Signal Corps specifications for airplane cloth, mill tests and their results, laboratory tests and the corroboration of certain mill tests by the Signal Corps and the Bureau of Markets. Copies of this publication may be procured from the superintendent of documents, Government printing office, Washington, D. C., at 10 cents per copy.

---

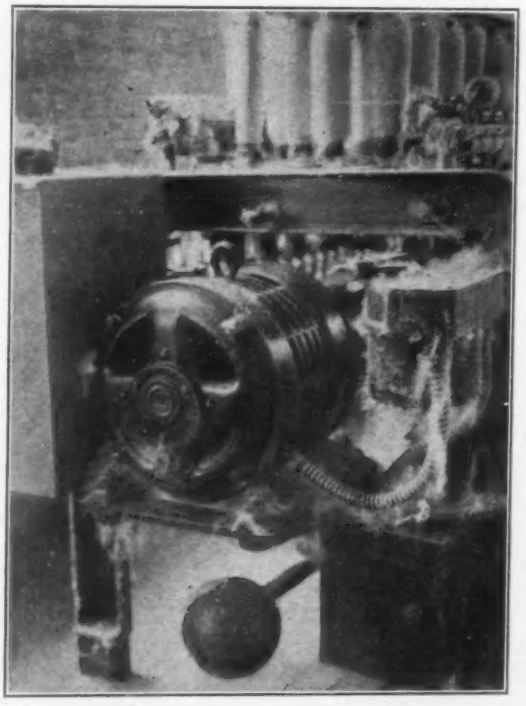
National Aniline & Chemical Company, Inc., has issued a booklet which gives in detail the approved recipes for matching the standard shades as shown in the Spring 1921 Color Card recently issued by the Textile Color Card Association. There are 57 cotton recipes, which, together with the dyeing details, form a valuable dyeing compendium of fashionable and seasonable shades. The volume comprises 27 pages, with several blank pages for notes and memoranda.

---

Southern Distributing Company, Charleston, S. C., was recently organized with a capital stock of $250,000 for the manufacture and distribution of soluble tallows, gums, starches, mill paints and general textile supplies. The company will handle a varied line of imported materials for the textile trade, it is announced. H. E. Faulkner, well known in the textile field, is vice-president and general manager of the company. A new two-story plant is now in course of construction and machinery is now coming in.

## A Direct Motor Drive.

In changing from group drive to individual motor drive of 128 ring spinning frames at the Indianapolis (Ind.) Bleaching Company sometime ago, the motors were attached directly to the frames without moving the existing machines. Previously, the machines were driven through line shafts attached to the ceiling. These line shafts were removed and the motors were installed without disturbing the lay-out of the plant. The illustration shows how these motors are arranged. The motor is mounted on cast iron brackets attached to the end of each spinning frame. They are so arranged as to be connected directly to the cylinders on the frames. Even the diameter of the cylinders did not have to be changed as the motor was obtained which gave exactly the correct speed. These motors are 5 hp., three-phase, 550 volt, 60 cycle, 1150 r.p.m., Westinghouse textile motors. They are controlled by Westinghouse textile drum type switches with shipper-rod control.



The motors are controlled by the shipper-rod operation which was formerly used with belt drive. The switch is attached to a shipper-rod on the frame so that the motors and machines can be easily started and stopped from either end. By the utilization of this control the changeover has no effect upon the operation and the machine is entirely in the same manner as it was before.

Directly below the switch are the fuses for the motor entirely enclosed in the steel cabinet. Connections from the switch and fuse box to the motor are made with wires covered with flexible steel conduit.

By the installation of the motors driving the machines directly, all shafting was eliminated which resulted in better lighting and decreased noise. Furthermore the maintenance of bolts and shaft bearings was obviated and the possibility of oil dropping on the frames was removed.

# Liquid E.B.G. Chlorine

## A Few Advantages

Absolute uniform quality.

Strength not affected by length of storage or weather conditions.

Contains no sediment or sludge.

Supplied in handy containers.

Considerable saving in freight charges.

**Send for latest booklet and become fully posted.**

**ELECTRO BLEACHING GAS CO.**

**Pioneers and Leading Manufacturers of Liquid Chlorine**

**PLANT: NIAGARA FALLS, N. Y.**

**Main Office: 18 East 41st St., New York Chicago Office: 11 So. La Salle St.**

Shipped in Handy Containers

# CORTRIGHT METAL SHINGLES

**—And as to the durability of Cortright Metal Shingles**

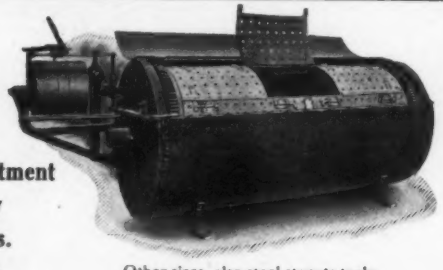
25 years is not an uncommonly long time for a Cortright Metal Shingle roof to protect a building from wind, rain and fire. Cortright Metal Shingles come HAND DIPPED GALVANIZED, GALVANIZED TIGHT COAT AND IN TIN PAINTED RED AND GREEN—all in 4 patterns. Get our proposition also our book, Concerning That Roof.

CORTRIGHT METAL ROOFING CO.

*Philadelphia* *Chicago*

STANDARD SINCE 1887

**100 Pounds Each Compartment Capacity 1200 Lbs. Per Day.**



Other sizes, also steel storage tanks built to order.

**IMPROVED STEEL ROTARY DYEING MACHINE**

Manufactured by

**ROME MACHINE & FOUNDRY CO. - ROME, GA.**

**Write for Prices**

# *A New Handbook*

**On Reinforced Concrete Construction**

FOR engineers, architects, contractors and students of reinforced concrete construction, we offer a handbook, "USEFUL DATA ON REINFORCED CONCRETE BUILDINGS." Price $2.50.

**CORRUGATED BAR COMPANY, Inc.**

**Mutual Life Building Buffalo, N. Y.**

# LOWELL CRAYONS

Meet the requirements of any cotton, woolen or worsted mill.

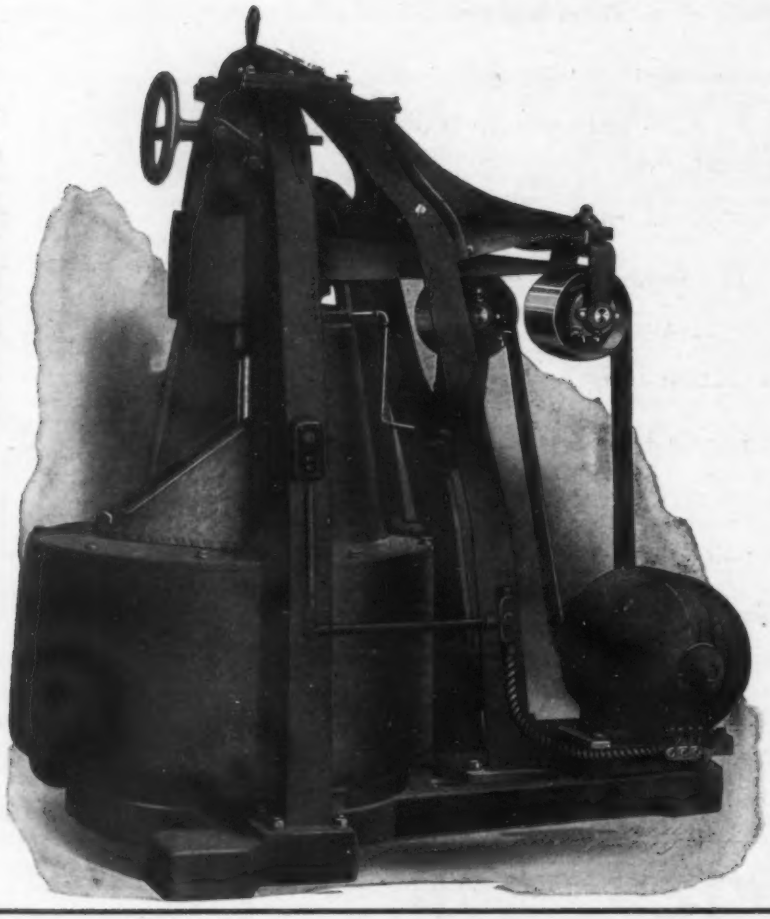
**May we send samples? 15 Colors and White**

**Lowell Crayon Company**

***Original Manufacturers***

**LOWELL, MASS., U. S. A.**

***Trade Mark on every box***



# *A Vibrationless Extractor for Textile Mills*

Vibration has been reduced to the extreme minimum in this American Overdriven Extractor, designed and manufactured for the textile industry by The American Laundry Machinery Company, largest manufacturers of this equipment in the world.

For many years these extractors have been noted for their improved design and substantial construction. If you would see one or more in operation, visit some of the leading mills.

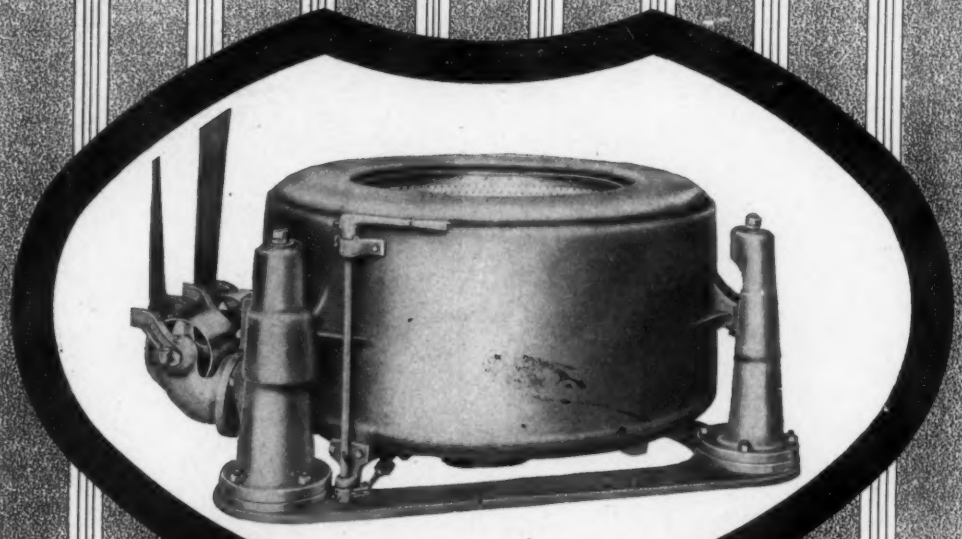
Why not let the experiences of these many well-known users assist you in selecting your extracting equipment? Your letter of inquiry will receive immediate and respectful attention.

**Also manufacturers of American Rotary Hosiery Presses—Automatic Underwear Presses—Rotary Fulling and Dyeing Machines — Knit Fabric Calenders—Underwear Finishing Presses—Rotary Dryers—Mill End Waste Reclaiming Systems, and American Mill Village Laundries.**

**THE AMERICAN LAUNDRY MACHINERY COMPANY**

***Specialty Dept. C*** ***Cincinnati, Ohio***

# Tolhurst



# HYDRO-EXTRACTORS

If your industrial problem demands a successfully operating hydro-extractor allowing unrestricted access to the interior of basket, the

## TOLHURST "Center-Slung" Hydro-Extractor

will meet your most exacting requirements.

Flexibly slung from supporting columns, it readily adapts itself to unbalanced loads and runs smoothly.

These machines come with grease-lubricated roller bearings and are provided for countershaft or motor drive from above or below. Baskets are of 40", 48" or 60" diameter.

## TOLHURST MACHINE WORKS

**Established 1852.** **TROY, N. Y.**

**New York Office, 111 Broadway**

Southern Rep., Fred H. White, Realty Bldg., Charlotte, N. C.

Western Rep., John S. Gage, Hartford Bldg., Chicago, Ill.

San Francisco Rep., B. M. Pilhashy, Merchants Exchange Bldg., San Francisco, Cal.

Canadian Rep., W. J. Westaway Co., Main & McNab Sts. Hamilton, Ont. 400 McGill Bldg., Montreal.

## $500.00 Saved Monthly In Boiler Labor Alone—

AFTER operating a Permutit Water Softening and Filtering System for one and three-quarter years, a Light & Power Company in Illinois reported the following:

We have no scale in boilers or pipe lines.

Our saving in coal is quite material—the saving over former conditions is easily 30%.

We formerly had two men drilling boiler tubes all the time, and now have none.

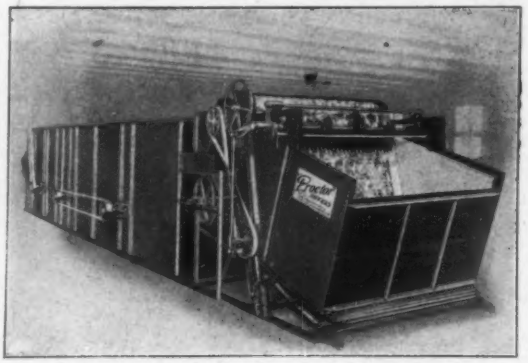
Our saving in boiler labor is easily $500.00 per month.

Zerowater appears just the thing for condensers.

It will pay you to investigate the system that is saving 30% fuel and $500.00 monthly in labor for others. Ask us for more facts—other testimony. Write us today. No obligations.

**The Permutit Company**
440 Fourth Ave. New York
Offices in all principal cities

85



Proctor Stock Dryer, Single Conveyor Type, for Cotton, Rags, Waste, and Similar Materials.

## The Proctor Solves the Drying Problem

A user of the Proctor Raw Stock Dryer tells us that ever since the machine has been installed, it has been in continuous operation and has involved no expenditure, for upkeep or repair. Less power is required than with the older methods of drying, resulting in a considerable saving. Another user has spent only two dollars for repairs in about 11 years.

Many hundreds of Proctor Dryer users are well satisfied with the service this machine is giving them. As one writes, "were we to make additional installations of this character, we would select another of these machines."

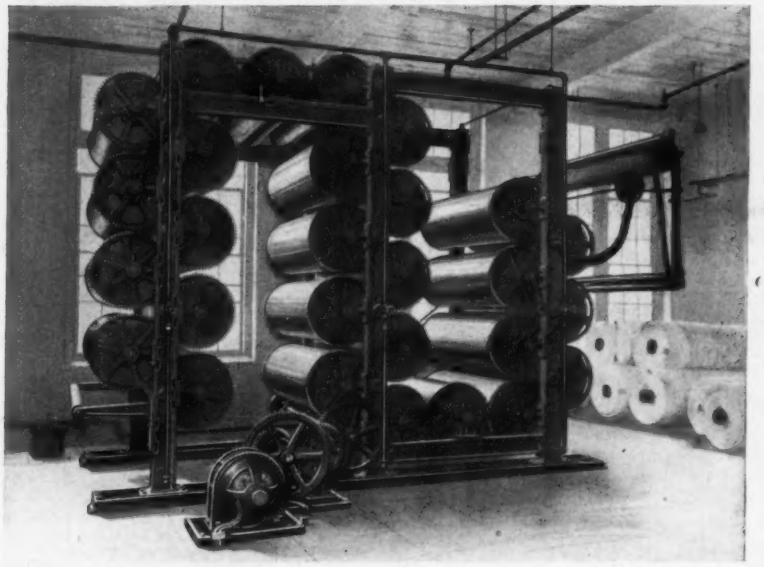
The Proctor Raw Stock Dryer is thoroughly dependable and fulfills our guarantees. The stock is turned out with that lofty appearance so desirable for subsequent processes.

If you are contemplating the purchase of additional drying equipment, investigate the Proctor Dryer. Write today for a copy of our catalog.

PROCTOR and SCHWARTZ, INC.
Formerly Phila. Textile Mach. Co.
603 Tabor Road PHILADELPHIA

"Proctor" DRYERS

760



*Drying Machine. 28 Cylinders.*

WE welcome new suggestion for the finishing of fabrics. Our staff of engineering experts and mechanical designers like to work on your problems as well as our own.

***Our catalog will be sent on request.***

H. W. BUTTERWORTH & SONS CO.

*Established 1820*

PHILADELPHIA

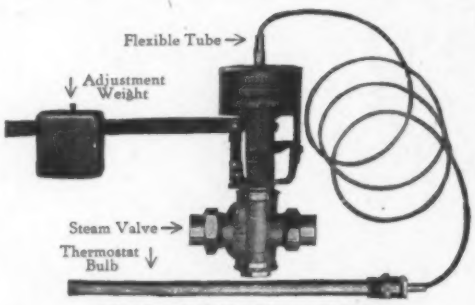
PROVIDENCE OFFICE
Turk's Head Building

Canadian Representative
W. J. WESTAWAY COMPANY
Hamilton, Ontario. Canada

**Bleaching Machines**
**Drying Machines**
**Singeing Machines**
**Mercerizing Ranges**
**Hydraulic Presses**
**Dyeing Machines**

FINISHING
Butterworth
MACHINERY

**Soaping Machines**
**Tentering Machines**
**Mangles (all kinds)**
**Calenders (all kinds)**
**Color Kettles**
**Cell Dryers**




**The Powers Regulator No. 11.**

The Powers No. 11 Regulator controls your sizing, dyeing, and starching operations with greatest efficiency and least expense. Automatically maintains the proper working temperatures. No danger of overheating because the No. 11 is very responsive to the slightest change of temperature and thoroughly regulates regardless of variation in initial pressure. Installed on a "make good" basis—or no charge.

# Too Hot–Too Cold

A man's eye watching the thermometer. A man's hand turning the valves. He does his absolute best, but you know that his results are not uniformly right—because at some point there was too much or too little heat.

## Automatic Heat Control Stops That

At best, a man can only use his **judgment** of temperature, which varies from one minute to the next.

## Powers Heat Regulators

Eliminate the guesswork by applying the Powers Automatic Heat Regulators. They are scientifically constructed; made to operate according to certain known physical laws. We manufacture a great variety of types suited to practically *any* heat regulation condition.

Consult us at once. Our long experience enables us to give you definite information and intelligent advice.

## THE POWERS REGULATOR CO.

*Specialists in Automatic Heat Control.*

985 Architects Bldg. NEW YORK — 2761 Greenview Ave. CHICAGO — 396 The Federal St. Bldg. BOSTON

The Canadian Powers Regulator Co., Ltd., Toronto, Ont.

(1251)

# COCKER HOSIERY DYEING MACHINE

THIS machine has been thoroughly tested out with all colors and under all conditions, and is guaranteed to give the very best results possible in the dyeing of hosiery.

The stock is carried in four perforated metal containers equipped with one removable head on each container, and the containers mounted on Spiders in such a manner as to permit of their being loaded and unloaded quickly from the machine.

The Spiders carrying these containers are revolved in the vat *in one direction.*

Machines are furnished with either belt or motor drive.

**Points of Advantage in This Machine That Must Be Considered**

1st—Matting and chafing of the stock is entirely eliminated.

2nd—Percentage of re-dyes is reduced to a minimum.

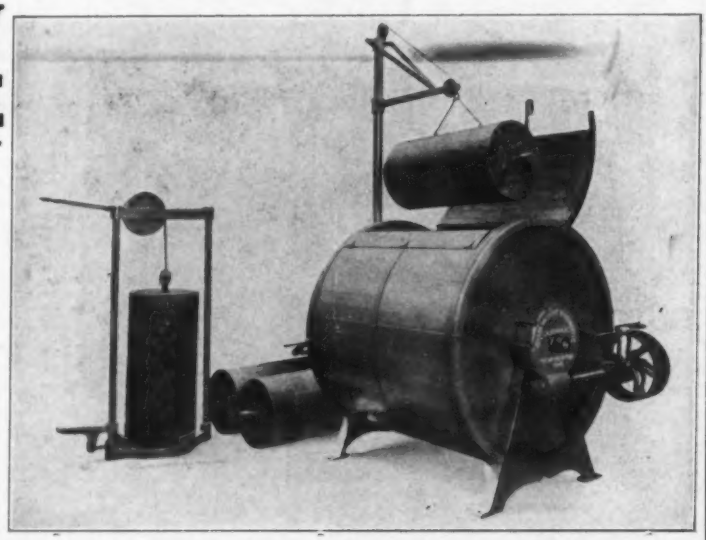
3rd—Different sizes and descriptions can be handled in one dyeing without confusion.

4th—Time required for loading and unloading machine reduced to a minimum.

5th—Absolutely level dyeings on all colors.

6th—Minimum of power required for operation.

For further particulars and prices write or wire.

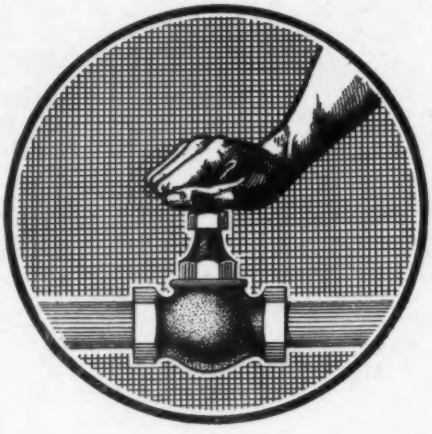


## Cocker Machine & Foundry Co.

**GASTONIA, N. C.**

**Builders of Textile Machinery.**

**Warpers—Beamers—Balling Attachments—Wrap Dyeing Machinery—Reels**



**Putting a man at a hand valve** and telling him to maintain certain temperatures is asking him to do the impossible.

Warp sizing needs much more careful temperature regulation than is possible under such conditions. The temperature should be exact to a fractional degree.

There is just one way to get sizing results that are consistently uniform—install the TAG Perfect Size Box Temperature Controller.

Put this TAG Controller to work on your sizing process and give the man something else to do—something he *can* do.

Don't worry about sizing. The TAG Controller will manage the entire process automatically and precisely.

Catalog C-425 tells the whole story.

C.J. TAGLIABUE MFG. CO.
TEMPERATURE ENGINEERS
18-88 Thirty-Third St. Brooklyn, N.Y.

**WATER SOFTENING SYSTEM** — Borromite — **BELONGS IN YOUR PLANT**

In your scouring and bleaching work the soft neutral water it delivers saves soap and soda and prevents precipitation of insoluble soap curds in the fabric.

In your Dye Room, it avoids the streaks and sticky precipitations that are caused by the presence of lime or magnesia in the water. It prevents "lists," avoids chemical action of hardening salts on "color lakes," saves loss of mordants; overcomes the many troubles due to calcium, magnesium or iron in water.

In the Boiler Room it cleans boiler and steam-line of scale—reducing fuel cost.

*Send for our Bulletin.*

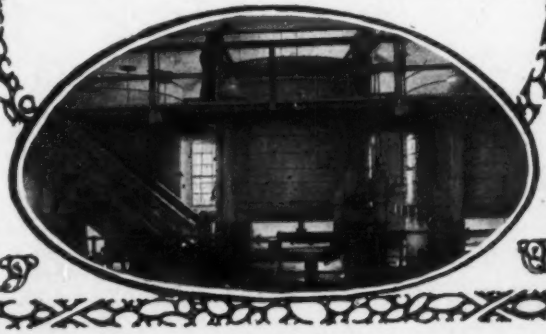
**Borromite Company of America**
1516-105 West Monroe St., CHICAGO

# DECALSO
## WATER SOFTENER

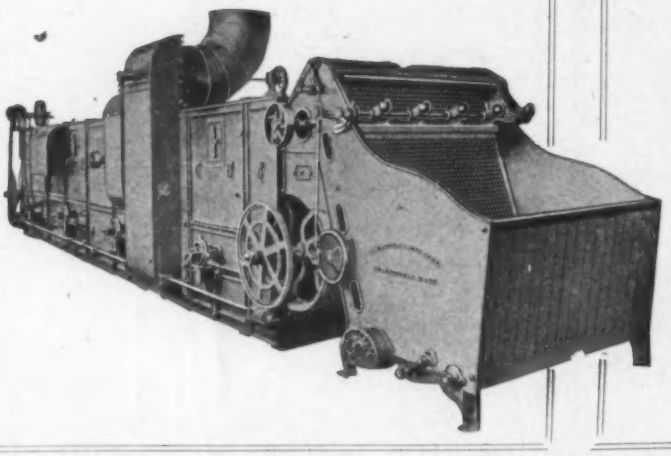
You know the necessity of perfectly soft water in your processes, and what it saves you in soaps, chemicals, dyestuffs and labor—how it makes the production of better goods possible. You know that a good water softener will be an investment, not an expense. The question is, which softener will be the best.

"DECALSO" Water Softeners are proving to be the most scientific and efficient softening apparatus on the market. Regeneration does not require long delays. They are always dependable. Let us tell you the whole story. Write today for booklet.

AMERICAN WATER SOFTENER CO.,
*The Oldest Water Softener Manufacturer in the Country*
Lehigh Ave. & 4th St. Philadelphia, Pa.



# Sargent Dryers



## Perfect Satisfaction

Doubtless, in many things that you have bought you have had that feeling of perfect satisfaction that comes from the use of the best that can be bought.

There are over 250 mills who have that feeling about their drying machines—users of Sargent Dryers—machines that take the moisture out of material rapidly and thoroughly without damage to the stock and with less trouble, power, time and expense.

The quality of the material is preserved, and a soft "feel" of the yarn obtained.

An experience of 50 years of Dryer manufacturing has made Sargent superiority possible. There are over 40 sizes of Sargent Dryers—for cotton, linters, rags, wool or flax—also carbonizing.

*Write today for catalog.*

**C. G. SARGENT'S SONS CORPORATION**
**GRANITEVILLE, MASS.**

*Fred H. White, Southern Agent*
*Charlotte, N. C.*

SURPASS CHEMICAL CO. FOR USE IN AUTOGYP PROCESS OF DYEING
AUTOGYP
PATENTED IN U. S. A. SEP. 26, 1916 IN CANADA OCT. 10, 1916
ALBANY N.Y.

## DIRECT FROM KNITTING TO DYEING MACHINE

This wonderful new patented process makes for big economies in the dye house. The material direct from the knitting machine is run into the dyeing machine. Bleaching operation is eliminated and bleaching expense saved. This process simultaneously dyes to shade and eliminates all specks, motes, leaf and shives in one operation and in just three hours time, by the use of AUTOGYP, which is the registered name of the chemical used in the process and is supplied in powdered form in metal drums of 300 pounds net weight.

The enormous savings of such a method are obvious to every practical Milliman. Here are a few of them: 30 per cent of Labor; 90 per cent of Water; 50 per cent of Steam; 4 to 17 Hours (in addition), 25 per cent of Tensile Strength, and 3½ per cent of Shrinkage are saved. These figures are not guesses, but results from actual tests carefully made.

If such economies interest you let us prove them by actual demonstration with your own goods, your own equipment in your own plant at our expense. Write for our booklet which gives complete information.

**SURPASS CHEMICAL CO., Albany, N. Y.**

AUTO GYP
*Process of Dyeing*

## TEST COLOR FASTNESS BY RADIATION METHOD

The need for a basic standard brought the perfecting of this method of determining fastness to light of colors and dyestuffs.

**The FADE-OMETER was**

designed solely to fill a need for a standardized light equal in intensity to sunlight and available at any period of the year.

Elimination of the old time sun testing method has brought about a revolution of vast import to the textile manufacturer who using the Fade-ometer standard, reproducible tests can now be made in a few hours.

Unequaled for comparative servcie. Write us for fuller information in regard to this instrument.

**ATLAS ELECTRIC COMPANY**
360 W. Superior Street
CHICAGO, ILLINOIS

*The heart of the American Dyestuffs Industry, the Deepwater Works of the Du Pont Company at Deepwater Point, New Jersey.*

Building for permanence and not to meet a wartime emergency, our vast Deepwater Plant is the visible pledge of the Du Pont Company to America that her dyestuffs needs will be met, no matter what the situation without her borders.

From the research laboratory, through every phase of manufacture back to the checking laboratory, adequate facilities, involving a tremendous investment, are provided for large scale production of the essential dyestuffs required by the textile manufacturers and other dyestuffs consuming industries.

**E. I. du Pont de Nemours & Co., Inc.**
***Sales Dept.*, Dyestuffs Division**
WILMINGTON, DEL.

DU PONT DYESTUFFS

# "BRETON"
# MINEROL "F"

*FOR*

## *Cotton Piece Goods*

"We are pleased to say that adding the *Breton Mineral "F"* in our boil has given us a softer finish"

**BORNE, SCRYMSER COMPANY**

**80 South Street, NEW YORK**

**BOSTON** **PHILADELPHIA**

**Works: Elizabethport, N. J.**

# The Grasselli Chemical Co.

DYESTUFF DEPARTMENT"

Works at:

GRASSELLI, N. J. ALBANY, N. Y.

SULPHUR COLORS: Black, Blue, Brown, Green.
Direct Cotton Colors, Acid and Chrome Colors
MONOPOLE BRILLIANT OIL
Bichromate of Soda Sodium Sulphide
Zinc Dust, Chemicals and Acids

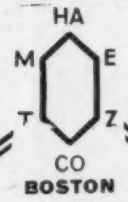
BRANCH OFFICES:

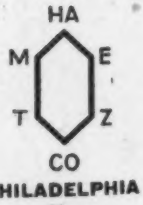
| | | | | |
|---|---|---|---|---|
| New York | Philadelphia | Birmingham | Charlotte | St. Paul |
| Boston | Chicago | Cleveland | Cincinnati | Providence |
| St. Louis | Detroit | New Orleans | Milwaukee | |

## The Grasselli Chemical Company, Limited

Toronto Hamilton Montreal

Sole Selling Agents for Essex Aniline Works, Inc., Boston, Mass.



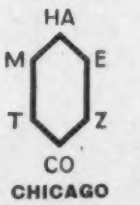
*MORE than 40 years in the merchandising and manufacturing of dyestuffs has given us an insight into the intricacies of the many problems with which you are confronted and a wealth of information and experience which is always available to you.*

*We feel justified in soliciting your business by virtue of past performances and service, assuring you of our continued earnest desire to co-operate with and serve you.*

*Aside from the line of colors made in the U. S. by*

*CONSOLIDATED COLOR & CHEMICAL CO.*
*and*
*CENTRAL DYESTUFF & CHEMICAL CO.,*

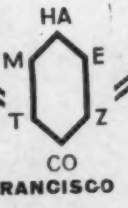
*we will be glad to procure for you on Import Licenses that may be granted you by the War Trade Board such colors as are available and made by the Farbwerke-Hoechst, Farbenfabriken vorm. Fried. Bayer & Co., Leverkusen, Leopold Cassella & Co., Frankfurt, Kalle & Co., Biebrich, and Griesheim-Electron (Oehler) of Frankfurt. Licenses are granted for colors not made in the United States or not made in sufficient quantities or at reasonable prices. All products brought over on Licenses will be obtained by us at the lowest prices quoted for export to anyone or any Government by the manufacturers.*



**H. A. Metz & Company, Inc.**

122 Hudson Street

**New York**



# ALTHOUSE CHEMICAL COMPANY

500-540 Pear St., Reading, Pa.

Manufacturers of

## Direct, Union and Chrome Colors

---

## DIRECT GARNET

Easily Soluble Level Dyeing

## ALTHOUSE CHEMICAL COMPANY

## VICTOR MILL STARCH

### The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

## THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience

# ZAVON

## *The Super Solvent*

The manufacture of ZAVON, the well known textile solvent, has been taken over by a new company and extensive factories have been put in operation at Danbury, Conn.

Here in the new factories ZAVON will be manufactured on an extensive scale to supply the textile industry with this superior solvent.

In the kier, the open kettle, or for all softening purposes, ZAVON is superior to soaps and soluble oils.

Send for working samples of ZAVON and learn the advantages of this effective solvent.

AV ZON TRADE MARK

## ZAVON COMPANY, Inc.

**Danbury, Conn.**

**Boston** **Philadelphia** **Chicago** **Columbus, Ga.**

Midland Blue R

Midland Vat Blue 5 B

Are Vat Blues of special interest to all manufacturers of fast color Ginghams and Chambrays—of good fastness to washing, chlorine and light—suitable for both raw stock and yarn dyeing. For the same trade we also have some new sulfur colors of extreme brilliancy.

**Aniline Dyes and Chemicals, Inc.**

**Cedar and Washington Streets** **New York**

JACQUES WOLF & CO.

Manufacturing Chemists & Importers

MAIN OFFICE and WORKS: PASSAIC, N. J.

New York Office: 112 John Street.

HYDROSULPHITES

For All Purposes

All Sizing and Finishing Products for Cotton

Bensapol
Bleaching Oil
Cream Softener
Glasgow Sizing
Levuline
Soluble Oils
White Finish

MONOPOLE OIL

Reg. Trade Mark No. 70991

QUALITY PRODUCTS

ANDREW CARNEGIE writing in his autobiography regarding the necessity of maintaining the high quality of the products of one of the companies organized by him as a young man, says: "This policy is the secret of success; uphill work it will be for a few years until your work is proven, but after that it is smooth sailing."

The policy of making the best that can be made, so successfully followed by Mr. Carnegie, is the policy that governs this Company in the production of each and every one of its products.

**Atlantic Dyestuff Company**

WORKS: PORTSMOUTH and BURRAGE

MAIN OFFICE, BOSTON

NEW YORK PHILADELPHIA CHARLOTTE
CHICAGO PROVIDENCE

# Starch

EAGLE FINISHING

400 MILL 500 MILL

C. P. SPECIAL FAMOUS N

BLUE RIVER CRYSTAL

These STARCHES are manufactured by carefully controlled and standardized methods.

PURITY and UNIFORMITY are secured by accurate laboratory tests.

ECONOMY and EFFICIENCY are proven by the constantly increasing number of exacting cotton manufacturers who are getting satisfactory results by using our STARCHES especially selected for their conditions.

Recommendations are based upon intelligent investigation of each individual problem.

*Corn Products Refining Co.*

*New York*

*Southern Office* *Greenville, S. C.*

# Starch

# IMPROVE YOUR BLACK

## "DEVELOPENE"

Turns a *Rusty Black* to a *Lustrous One.*

THERE is no slight of hand connected with it. Send a pair of stockings, a skein of yarn or a sample of fabric, which has been dyed black, washed but not finished, to our Laboratory.

We will finish it with "Developene" and return to you. There will be such an improvement you will immediately want "Developene" for finishing your goods.

MANUFACTURED ONLY BY

## Kali Manufacturing Co.

MANUFACTURING CHEMISTS

1404-1410 N. Front Street **PHILADELPHIA, PA.** 1409-1413 N. Hope Street

Salicylic Acid Prevents Fermentation of Size

Sole Manufacturers of Hydroxy Oil and Kali Chlorine Neutralizer—the Superior Anti-Chlor. Formaldehyde.

ESTABLISHED 1815.

## Arnold Hoffman & Co., Inc.,

PROVIDENCE, R. I. NEW YORK, N. Y.
BOSTON, MASS. PHILADELPHIA, PA.
CHARLOTTE, N. C.

Importers and Manufacturers of

**STARCHES, GUMS, DEXTRINE, ALIZARINE ASSISTANT, SOLUBLE OIL, SOAP**

And Every Known Material from Every Part of the World for Starching, Softening, Weighting and Finishing Yarn, Thread or any Fabric.

Special Attention Given by Practical Men to Specialties for

**SIZING, SOFTENING, FINISHING AND WEIGHTING**

Cotton, Woolen and Worsted Fabrics combining the latest European and American Methods. We Believe There is No Problem in

**SIZING OR FINISHING**

That We Cannot Solve.

FORMULAS for the best method of obtaining any DESIRED FINISH on any fabric cheerfully given.

# B. & L.

## Anti-Chlorine Bleaching Process

# FOR COTTON

**Simple**
**Scientific**
**Safe**

## BOSSON & LANE

Works and Office, Atlantic, Mass.

1872 1920

# CHEMICALS, DYESTUFFS COLORS, GUMS, OILS

*FOR THE TEXTILE INDUSTRY*

*HEADQUARTERS FOR*

**ACID, BASIC, DIRECT, CHROME and SULPHUR COLORS; "CIBA" and "CIBANONE" FAST VAT DYES**

**A KLIPSTEIN & COMPANY**

644-652 Greenwich Street NEW YORK CITY

# Mercerizing Gassing Bleaching

We have a new and strictly modern plant for mercerizing, gassing and bleaching.

Located as we are in the center of the combed yarn spinning industry of the South, we are enabled to furnish you with the highest quality processed yarns in all numbers.

## The American Processing Company

Mount Holly, N. C.

NEW YORK REPRESENTATIVE:
H. B. ROBIE,
No. 346 Broadway,
New York City.

SELLING AGENTS,
THE RIDDLE COMPANY,
Mariner & Merchant Bldg.,
Philadelphia.

## Rubber Covered Rolls

If your plant is shut down or is operated on short time only

**NOW IS THE TIME**

to have your rubber rolls put in first-class serviceable condition.

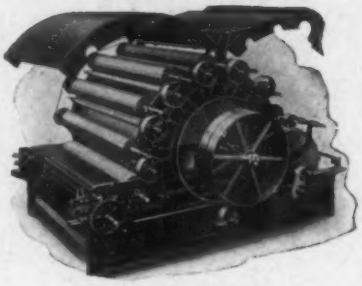
We are prepared to cover your rolls promptly and our service and experience are at your command.

Be ready when business returns to normal and you will be ahead of those who wait.

*"For 25 Years Specialists in Rubber Rolls"*

**The American Wringer Co.**
**Dept. F. Woonsocket, R. I.**

## Smith & Furbush
## Machine Company
### Philadelphia



*Cotton Waste Card.*

Card shown above has been recently designed. It is especially adapted for the making of Absorbent Cotton, Wadding, Batts or Felts of the better grade, etc. Similar cards in sets are used for Cotton Waste Yarns spun on the woolen principle. Ask for circular S-165.

Specialists in all kinds of Waste Machinery.

## *"Cotton Mill Machinery Calculations"*

EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitute one of the best references on the subject obtainable.

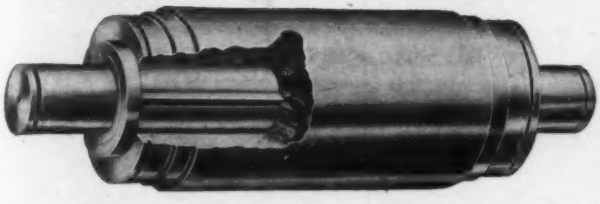
The two volumes are illustrated with 45 diagrams and contain 21 reference tables.

As the value of a book lies in its contents and not in a fancy cover, we have put these two volumes out in a strong, serviceable paper binding. You can secure them in conjunction with a subscription to COTTON.

**Write for circulars and full information.**

# PERKINS
## Patented SPLINED CALENDER ROLLS

**"RESISTANT BUT RESILIENT"**



## Their Superiority Is Due To Unique Advantages!

When you purchase a Perkins Roll, you do so with a feeling that you are getting the best that can be bought, not only in manufacturing quality—for they are the result of 40 years' experience—but in unique features that can be found only in the Perkins.

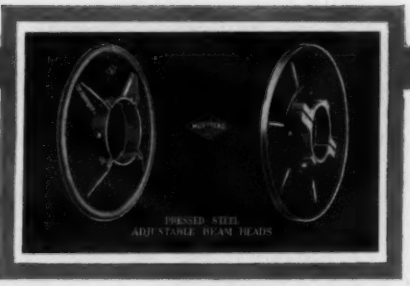
All are fitted with the Perkins Patented Spline which prevents slipping or turning on shaft. Let us tell you all about the advantages of the Perkins and what other well known finishers are gaining from their use.

Every Perkins Roll is guaranteed. Your old rolls can be refilled to gain special advantages of the Perkins.

The line includes Paper Rolls, Husk Rolls. Cotton Rolls and Combination Cotton and Husk Rolls for Calenders, Mangles, Schreiner Machine and General Finishing Work.

*Write today for information and prices.*

**B. F. PERKINS & SON, Inc.**
**HOLYOKE, MASS.**




# MOSSBERG

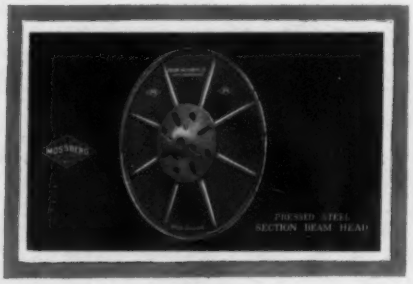
## STEEL REELS, BEAMS AND SPOOLS

BEAMS, Spools and Reels made of Pressed Steel are decidedly superior to those made of wood or cast-iron. They are stronger and lighter.

Mossberg Pressed Steel Construction is being utilized by mills the country over. Mossberg Equipment is saving time and money wasted by frequent changing and purchasing.

***Write for interesting catalog on Pressed Steel Equipment. It is instructive and valuable.***

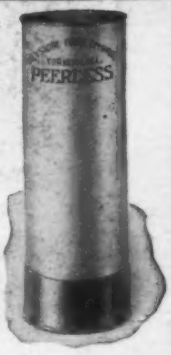
WALTER I. TUTTLE
*President and General Manager*
FRANK T. CHASE
*Treasurer and Sales Manager*
EVERETT L. FORD
*Secretary and Superintendent*




**FRANK MOSSBERG COMPANY**
WRENCHSMITHS FOR 20 YEARS
ATTLEBORO MASSACHUSETTS

*FOR HARDEST SERVICE*

**KEYSTONE "PEERLESS" SEAMLESS ROVING CANS**




Reveal no flaws or imperfections, even after years of most strenuous use.

Keystone Fibre is the basis of the "Peerless" Roving Can's durability and long life. It is the lightest, smoothest and strongest fibre made.

Your mill supply house can fill your order.

Send for booklet showing full line of Keystone Holloware for mills.

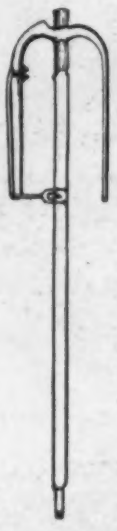
**Keystone Fibre Company**

Box 149-C Yorklyn, Delaware

*Southern Representatives: Wilson Co., Greenville, S. C.*
*Philadelphia Office: 504 North American St.*
*Boston Office: 136 Federal St.*



**S. S. & F. Co., Inc.**



**CHARLOTTE, N. C.**

**The S. stands for Southern, the S. & F. for Safety First**

The only Flyer Presser Manufacturers in the South. Does your machinery need OVERHAULING? Does your Steel Rolls, Flyers, Spindles, etc., need REPAIRING? Are you NEEDING Flyers, Flyer PRESSERS, Rings of any kind, Guide Wires or any other supplies? If so, this is YOUR BUSINESS — OUR BUSINESS IS SUPPLYING these needs.

**Southern Spindle & Flyer Co., Inc.**

CHARLOTTE, N. C.

W. H. MONTY, - Pres. and Treas.
W. H. HUTCHINS, - Vice-Pres. and Sec.



**The New Counter That Has a Longer Life**

The new Universal will stand higher speed than any other counter on the market. The first wheel in the machine when wearing, as all unit wheels do, may be replaced by one of the other members or by one from the factory, thus making its life ten times longer than any other counting machine.

It is the simplest counting machine made. Steel construction, onl yone part to oil through a patented oil cup which prevents the dust from entering the counter.

The Universal model may be used by a crank or pulley. It will record your production in yards or feet, either by stroke or revolution. Its readings cannot be tampered with. They are locked in position when not counting.

Made in two types for the textile trade. Our resetting model cancels reading back to naught by the turn of a thumb knob on the left side of the counter. The non-resetting type cannot be changed except by removing the seal to the cover and replacing the wheels. It is the best and cheapest counter on the market owing to its rigid construction and uniform application.

Let us send you a Universal Counter on ten days' trial.

Write for prices on quantities. By request our representative will call on you.

PRECISION MACHINE CO.,
415 Chestnut St.,
Milwaukee, Wis.

Southern Representative, Gordon Lewis, Atlanta, Ga.

**UNIVERSAL COUNTERS**



**The Palmer Adjustible Thread Guide**

**For Ring Spinning and Twisting Frames**

**Easily Adjusted.**

**Extreme accuracy and permanence of setting.**

**Cheapest of them all.**

**Mail guide-block for free sample.**

**Patented and manufactured by**

**THE I. E. PALMER COMPANY**

**Middletown, - - - Connecticut**

# Leatheroid
## MILL RECEPTACLES

# *The Truly Permanent Fibre Cars*

Leatheroid No. 3 All Fibre Car. Solidly Built. All wearing surface protected.

Leatheroid Cars, as all Leatheroid receptacles, are made of "Leatheroid"—the most durable and toughest, smooth fibre known, and the other parts are chosen with care, and put together right.

Leatheroid Cars stand the heaviest loads and roughest usage day after day, year after year, and then show very little effects of wear.

Leatheroid Cars, Roving Cans, Boxes, Baskets, etc., are made in all sizes and shapes.

**Sold by Leading Southern Mill Supply Houses.**

**Rogers Fibre Company**

**Leatheroid Sales Division**

**1024 Filbert Street, Philadelphia**

Leatheroid No. 2 Steel-Clad Car. Nothing Equals it for Construction, Finish and Serviceability.

SPINNING RING SPECIALISTS SINCE 1873

SPINNING RINGS
TWISTER RINGS
SILK RINGS

DIAMOND FINISH

TRAVELLER CLEANERS
TRAVELLER CUPS
GUIDE WIRE SETS

**WHITINSVILLE SPINNING RING CO.**
WHITINSVILLE, MASS.

TAPE for spinning and twisting frames is a staple, and there's not much to say about it, but you can depend on it that

# K-G SPINNING TAPE

is as good as can be bought—an honest product, the finest woven, the smoothest edges. The quality and stamina is there, and you have only to use it to be convinced of its superiority. Sample upon request.

**Knit Goods Specialty Co., Chicopee Falls, Mass.**

THE TAPE MAN SAYS

*"Shakespeare said some'm 'bout a killin' tongue and a quiet sword. K. G. may not have the big words, but they sho got the best tape."*

**WHILE YOUR MILL IS MAKING SUBSTANTIAL PROFITS**

is the time to equip with loom-harness whose service is measured from year to year instead of month to month.

"DUPLEX" FLAT STEEL HARNESS can show records of ten to fifteen years service at an average cost of ONLY 10c to 12½c PER SHADE PER YEAR with high cloth production and low percentage of seconds.

*Let us quote you.*

**STEEL HEDDLE MFG. CO.**

GREENVILLE PHILADELPHIA PROVIDENCE

**Southern Office**

111 Washington St. Greenville, S. C.
Hampton Smith, Southern Manager.

**AMERICAN SUPPLY COMPANY**

**PROVIDENCE, R. I.**

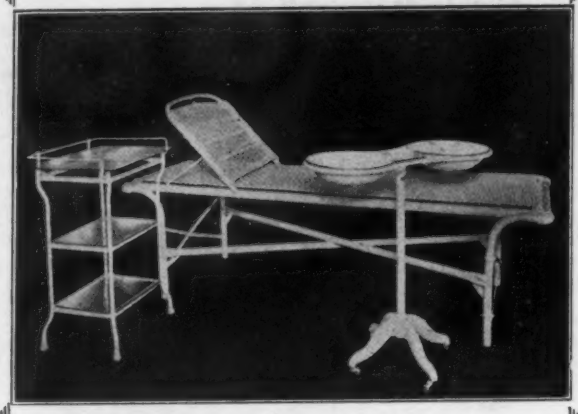
MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping,
Etc.

**We make a specialty of Harness for Warp Drawing Machines**

NOTE—No orders too large for our capacity. None too small to receive careful attention.

# F. H. Thomas Co.
## Boston, Mass.



*A First Aid Room or an Emergency Hospital For Your Employes will*

Decrease your liability for industrial accidents.

Decrease time lost through temporary incapacity of your workers.

Decrease needless suffering from minor injuries and prevent minor injuries from developing into serious cases.

Increase morale and loyalty among your employees and give you opportunity to show your interest in the welfare of your workers.

**The F. H. Thomas Company has equipped First Aid Rooms for over four hundred factories and mills, who have appreciated these facts, including the following Southern mills:**

| WINSBORO MILLS | WATEREE MILLS | WHITNEY MILLS |
|---|---|---|
| Winsboro, S. C. | Camden, S. C. | Whitney, S. C. |

A modern Thomas equipped emergency room will put you also among the progressive owners who are saving money and advancing the conditions of their workers.

Write for information and advice, stating, if possible, the number and nature of your accidents. Southern Representative.

# F. H. Thomas Co.
## 689-691 Boylston St.
## Boston. Mass.

# Doffing Cars Have an

unlimited use in textile mills. The car illustrated above is extensively used not only because it serves its purposes well, but because it costs little.

While our doffing cars can be made to any specifications, the usual combination consists of two boxes, one attached to a platform and one movable. The platform is mounted on four self-oiling casters so arranged that it is very easy to turn the car in a short radius.

Being made from Diamond Fibre and according to Diamond-F Standards, we can guarantee these cars to render better service and to last longer than other doffing cars. Fill in and mail the attached coupon today. We will send you complete information.

**Dept. WZ**

## Diamond State Fibre Company

**Bridgeport (near Philadelphia), Penna.**

**Branch Factory and Warehouse, Chicago,**

**Offices in Principal Cities.**

**In Canada:**

**Diamond State Fibre Co. of Canada, Ltd., Toronto.**

**Diamond State Fibre Co.,**
**Bridgeport (near Philadelphia), Pa.**

Gentlemen:—Please send me complete information regarding the doffing cars and other textile mill receptacles.

Name .....

Address .....

City .....

Dept. WZ.

## We Are Specialists In

# Cafeteria Equipment

**With particular reference to the needs of textile establishments.**

Your whole order, from salt cellars to steam tables, can be placed with us with the assurance it will be handled quickly and right. Our experience in this line insures an intelligent appreciation of your needs, while the immense stock we carry in our Chattanooga warehouse, within a few hours' freight haul from your establishment, is a guarantee of speed in meeting your requirements, an especially valuable consideration in replacing broken dishes and glassware.

*Prices will be found uniformly better than you may expect elsewhere, and the quality of every article is unsurpassed.*

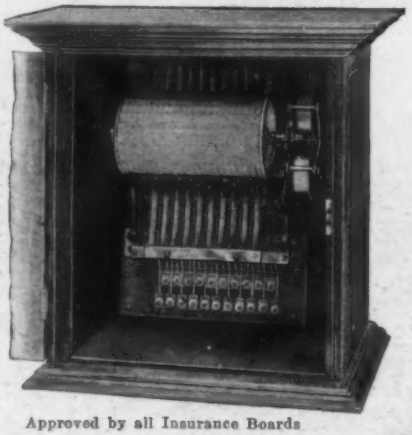
Won't you let us figure with you on your requirements? Our advice will be found extremely helpful in determining what will serve you best.

## Chattanooga Queensware Company

CHATTANOOGA, TENNESSEE.

*Specialists in Hotel and Cafeteria Equipment.*

## THE BOSTON MAGNETO RECORDER



THE LAST WORD IN WATCHMAN'S CLOCKS (STATION)

Approved by all Insurance Boards

This Tri-Record Clock furnishes a clear and separate registration for Saturday Night, Sunday and Sunday Night without changing the dial.

Estimate for complete installation cheerfully furnished on request.

WRITE FOR CATALOGUE

## ECO CLOCK COMPANY

196 Congress Street, Boston, Mass.

24 Cortlandt Street, New York
23 Walton Bldg., Atlanta, Ga.

## Are Sales Off?

Are you storing your finished product ready to make "Immediate Delivery?"

## J. D. COLLINS

STORAGE EQUIPMENT
926 GRANT BLDG.,
ATLANTA, GA.

has the equipment that will reduce your storage and handling expenses. Tiering machines, Electric and hand trucks, Gravity and Power Conveyors of all kinds.

***Catalogs and full information furnished upon request.***

# For the Happy Children of Contented Parents

When you provide happiness and enjoyment for the children of your employees it can be nothing else than a certain indication that you really have their interest at heart. Install Medart Playground Equipment in your community—watch the enjoyment it brings to the children—and, watch the increased contentment among your workers when they know that you are something more than just "the boss."

MEDART
PLAYGROUND EQUIPMENT

For 50 years the Medart Company has been manufacturing and perfecting gymnasium apparatus for vigorous men—an experience that has especially fitted it for the leadership it has always maintained in the development of playground equipment best suited to promote those bodily and mental qualities which mold today's childhood into tomorrow's man- and womanhood.

Catalog "L" fully describes Medart Playground, Swimming Pool, Gymnasium and Locker Room Equipment. Contains valuable suggestions for playground installations. It will be sent gladly to anyone requesting it.

**Fred Medart Manufacturing Co.**

Potomac & DeKalb Sts. St. Louis, Mo.
Gordon Lewis, District Manager, Walton Bldg., Atlanta, Ga.

STYLE K MIDGET ORCHESTRION

One of our small styles that is especially attractive where a small instrument is desired.

# SEEBURG

## Self Playing Musical Instruments are wonderful entertainers.

For Your

## Recreation Rooms, Cafeterias, Motion Picture Theatres

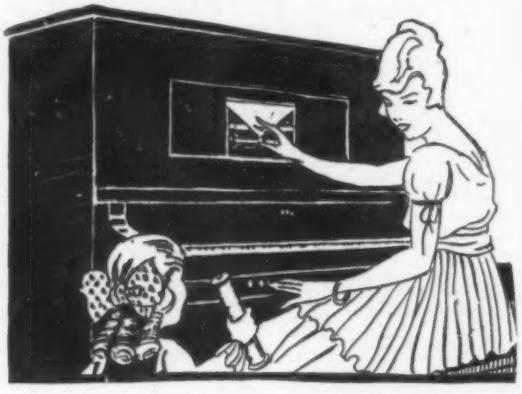
*Simplicity—Reliability—Service*

## Scofield Auto-Music Company

CHARLOTTE, N. C.

Special agents for the Southeast.

## MUSIC IS ESSENTIAL



### The Stieff—The South's Pride

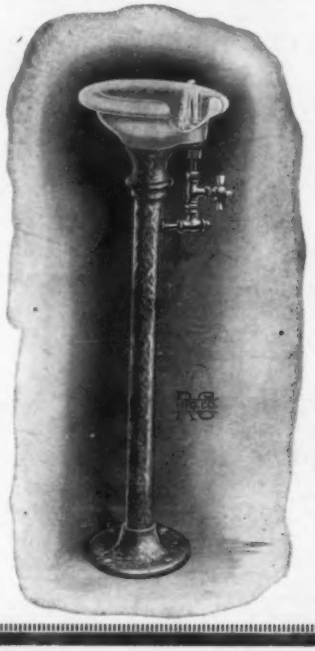
With a full rich tone, a responsive action and a case design always beautiful, Stieff Pianos have also another characteristic—one that has lifted them into the class of truly great pianos. That characteristic is REMARKABLE DURABILITY. Stieff tone is as wonderfully sweet and full and Stieff action quite as responsive after years of use as when the Piano was new. Ask any Stieff owner. Write for catalog.

**CHAS. M. STIEFF, Inc.**

M. D. MANNING, Manager.
Charlotte, N. C.
PIANO TUNING.

*No Danger Lies in*

## R-S FOUNTAINS



Science has decreed and definitely proven the danger in the drinking fountain that throws a vertical stream. It is conclusively known to be a fact vertical jets are germ spreaders.

***"Vertico-Slant" Stream Fountains***

Have been perfected expressly to eliminate all danger of contamination to the drinker regardless of how many persons may have visited the fountain before, and they are beyond all question the fountain of SAFETY.

Practical construction has placed this fountain on a basis where it is easy to guarantee cleanliness thus making a unit of ideal construction.

In this general plan of efficiency the industrial buyer should include R-S equipment.

Write us today for our 74-page catalog.

**Rundle-Spence Manf'g Co.**

Milwaukee, Wis.

## Do You Want to Sell It?

Probably you, like many other plants, have some equipment or machinery which you have taken out, or are thinking of taking out and replacing with new equipment.

Why not dispose of that second-hand equipment at a profit? COTTON is read by thousands of textile men, and perhaps that equipment is just what one of them needs.

### You Can Sell Your Second-Hand Equipment

to these plants by advertising in the Resale Section of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable Tell us what you have for sale and let us insert an advertisement for you.

**COTTON**

Grant Building, ATLANTA, GA.

## VOGEL

PATENTED

### Frost Proof Closets

**350,000 giving satisfaction. Save Water; Require no Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.**

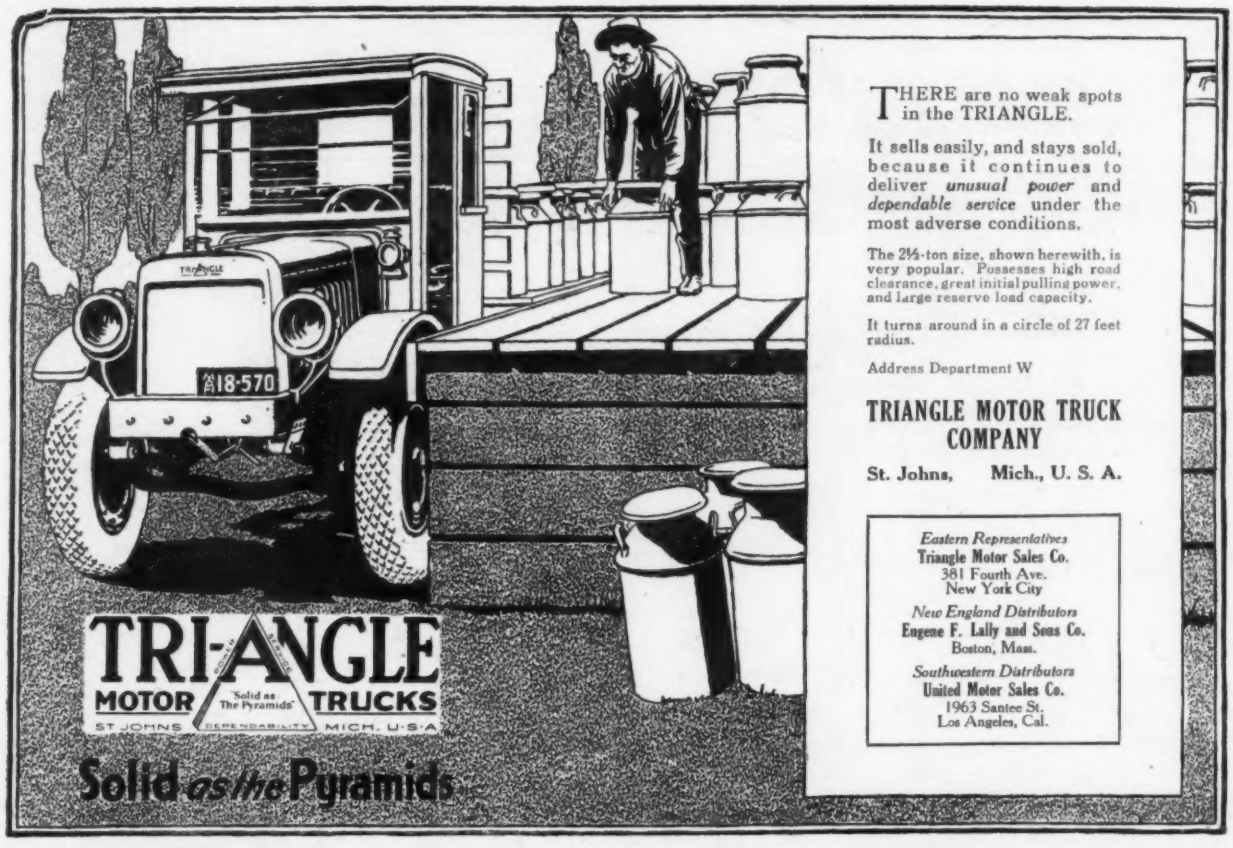
No. 1

- Enameled roll flushing rim bowls.
- Heavy brass valves.
- Strong hardwood seat. Galvanized tank.
- Malleable seat castings will not break.
- Tested under hydraulic pressure before leaving factory.

ASK YOUR JOBBER

**JOSEPH A. VOGEL CO.**

WILMINGTON
DELAWARE




THERE are no weak spots in the TRIANGLE.

It sells easily, and stays sold, because it continues to deliver *unusual power* and *dependable service* under the most adverse conditions.

The 2½-ton size, shown herewith, is very popular. Possesses high road clearance, great initial pulling power, and large reserve load capacity.

It turns around in a circle of 27 feet radius.

Address Department W

**TRIANGLE MOTOR TRUCK COMPANY**

**St. Johns, Mich., U. S. A.**

*Eastern Representatives*
**Triangle Motor Sales Co.**
381 Fourth Ave.
New York City

*New England Distributors*
**Eugene F. Lally and Sons Co.**
Boston, Mass.

*Southwestern Distributors*
**United Motor Sales Co.**
1963 Santee St.
Los Angeles, Cal.

# White Hickory
## BUILT ON HONOR

## Judge Them By The Miles of Service

**Miles of Service are assured by these Units.**
Continental Red Seal Motor, Eiseman High Tension Magneto, Sheldon or Timken Worm Drive Axles, Timken Bearings and all other units of highest standard grade.

The initial cost of a motor truck is only a percentage of the total transportation cost. It is *Miles of Service* that count.

You can rely on White Hickory Trucks. They stand up under adverse conditions—they give miles of service at an extremely low hauling cost, with any kind of a load, on every kind of road.

Back of the White Hickory Truck is the forty year record of the White Hickory Wagon.

**White Hickory Motor Corporation**
**Atlanta, Georgia, U. S. A.**

THIS
**CONVINCING COMPARISON**
SHOWS THE SUPERIORITY OF

SIGNODE SYSTEM

OVER THE USUAL BALE TIE.
LET US SEND YOU FULL DETAILS
**SIGNODE SYSTEM, INC.**
CHICAGO ATLANTA
Boston New York Philadelphia San Francisco
Toronto

| | | | |
|---|---|---|---|
| $\frac{5}{8}$" x .015 SIGNODE TIE | COSTS 12 % LESS PER FOOT | HOLDS UNDER 800 LBS. PULL | NO "SPIDER" TO INJURE HANDS |
| Compared with | | | |
| USUAL $\frac{5}{8}$" x .017 BALE TIE | COSTS 12 % MORE PER FOOT | BREAKS UNDER 500 LBS. PULL | DANGEROUS "SPIDER" OFTEN PRESENT |

**Cypress Tanks**
**Wooden Packing Cases**
**ALL STYLES**
Manufactured from
GEORGIA PINE POPLAR CYPRESS
WHITE PINE and GUM
Your Inquiry Solicited
**Hightower Box & Tank Co.**
Corner Humphreys and Glenn Streets,
BOX 1025 ATLANTA, GA.

# SPOOLS

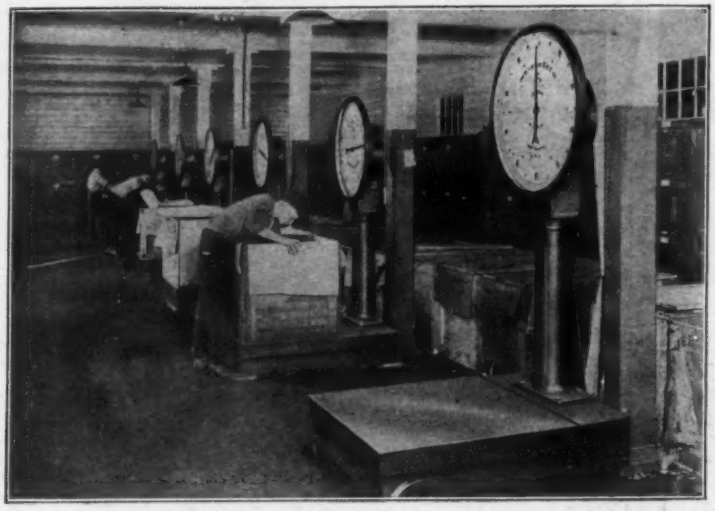
Let us submit prices and samples on WARPER and TWISTER SPOOLS. Plain wooden head and metal shield. A list of Southern Mills using spools given on request.

**Greenville Spool & Mfg. Company**
Greenville, S. C.

# TEXTILE SCALES

No. 5005. Gives yards per pound
No. 5000. Gives ounces per running yard
No. 5010. Gives yarn number for cotton yarns
No. 5015. Gives yarn number for woolen yarns
Used by U. S. War and Navy Depts.
CHRISTIAN BECKER'S ANALYTICAL AND SILK BALANCES
**THE TORSION BALANCE CO.**
Main Office, 92 Reade Street, New York
FACTORY: Jersey City, N. J.
BRANCHES: 31 W. Lake St., Chicago. 49 California St., San Francisco.

# Automatic Weighing



THE "KRON"—PORTABLE PLATFORM TYPE

in the plant of a leading manufacturer of fine textile fabrics.

This concern purchased their first Kron Scale in December, 1913, and have since purchased 23 more, making a total of 24 Kron Scales.

*Save*

TIME—LABOR—MONEY

by installing

*"Load and Look"*

## Kron Scales

AUTOMATIC Made in U. S. SPRINGLESS

All Metal Construction

There's a Kron for Every Weighing Purpose

*ALL TYPES—ANY CAPACITY—Dormant or Portable, Hanging Pan Types, Overhead Track Scales, Suspension Crane Scales, Etc.*

*Write for a copy of our catalogue.*

**American Kron Scale Co.**

430 East 53rd St., New York

Branch Offices & Service Stations in Principal Cities

CANADIAN KRON SCALE CO., MONTREAL, CAN.

Acme No. 9 Bale Buckle

USE

# ACME

Cold Rolled Bale Ties

with

Acme Bale Buckles

or

Acme Seals

**Acme Steel Goods Co., Mfrs.**

Atlanta: 10 Tift St.
Brooklyn: 167 41st St.
Chicago: 2840 Archer Ave.
New Orleans: Queen & Crescent Bldg.

Acme Nailless Strapping with Seal applied

## Acme DOORLESS Baler

**Will Reduce Your Shipping Costs**

You can get many more bales into a car when the baling has been done with

**ACME BALERS**

Therefore you will need fewer cars.
These powerful machines produce an extremely compact bale. You can get 50,000 lbs. into the ordinary freight car. This means also that the bales require less storage space. The Acme is the baler without doors. Four Acme Balers fit into the same floor space required by a single baler with swinging doors.

**Galland-Henning Mfg. Co.**

Milwaukee, Wis.
Southern Sales Representatives
THE LOVINGOOD COMPANY, Atlanta, Ga.

## Would You Be Reluctant to Accept the Insurance Company's Settlement?

Yet, that's all you would get if your factory was wiped out.

The time lost—the business you might have done—is something that does not enter into any insurance adjustments.

But the insurance companies—all of them—are keen to prevent fires. That is why they offer reduction of premiums on property protected by

**Richards-Wilcox Automatic Fire Door Hardware and Fire Doors**

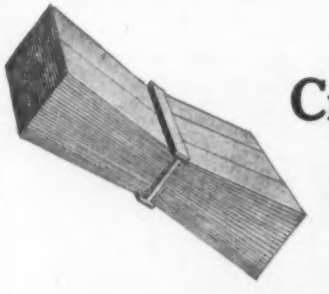
We will readily tell you of millions of dollars worth of property saved from fire by R-W Fire Door Equipment.

Whatever your requirements we can furnish the proper equipment.

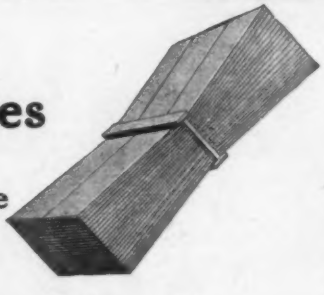
**Richards-Wilcox Mfg. Co.**

A Name for any Door that Slides

CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA — AURORA, ILLINOIS, U.S.A. — BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO — LONDON, ONT.



# "Never-Rot" Creosoted Pine Shingles

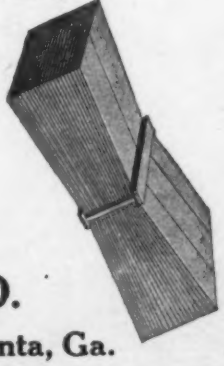


**Give Longer Life at Less Expense Than the Highest Price Untreated Shingles**

Our "NEVER-ROT" creosoted pine shingles are thoroughly impregnated with pure refined creosote by our special Hot and Cold treatment, which prevents their decay, and by its waterproofing action lessens warping and shrinking.

**Reduce Your Annual Roofing Costs 60% by the use of "Never-Rot" Creosoted Pine Shingles**

**Write us for carload prices delivered F. O. B. cars at your city.**



## GULF STATES CREOSOTING CO.

**P. O. Box No. 1022** **Atlanta, Ga.**

Stewart Silk Company mill at Easton, Penn. Concrete saw-tooth roof. Designed and constructed by Thompson & Binger, Inc.

## Building is equipment

YOU immediately buy new plant equipment, after you know that each replaced machine will pay for itself. Your factory building is equipment, too; replacement is often an economic necessity.

If so, it can be demonstrated with plans, charts, and figures. Do not hesitate to ask our professional judgment.

**THE ENDICOTT-JOHNSON WORKERS have chosen us to do the designing, engineering, and construction of all concrete buildings to be erected by them DURING 1920.**

# THOMPSON & BINGER
INC.
ENGINEERS & CONTRACTORS
CONSULTATION - DESIGN - CONSTRUCTION

NEW YORK
280 MADISON AVE.

SYRACUSE
GURNEY BUILDING

CONCRETE

# Put Daylight on the Job

DAYLIGHT is a panacea for many business ills. Make it work for you from whistle to whistle. Paint the interior of your plant with Dixielite, the original daylight saver.

It helps speed up production; first, by making all work easier to see; second, by eliminating those mistakes due to dark working conditions.

Light tends toward cheerfulness. Dixielite goes far towards keeping your employees happy and contented; and contentment has an actual dollar and cents value to your organization.

# DIXIELITE

***The Original Daylight Saver***

It is the perfect white finish for walls and ceilings of mills, factories, and warehouses. Once applied, Dixielite spreads daylight evenly and brilliantly to every corner of the room. As long as there is light outside, Dixielite works inside. It lowers electric bills. It makes a place more sanitary. It saves the eyes of your workmen. Dixielite is made in gloss, semi-gloss, and flat finishes. Let us send you a sample.

*Bay State Liquid Paints* answer every painting question. There is a paint, stain, varnish or enamel for every conceivable purpose. INOROUT, the all-round varnish is equally superior on inside or outside jobs. It can't be beaten.

THE BAY STATER

WADSWORTH, HOWLAND & CO., INC.
*Paint and Varnish Makers*
BOSTON, MASS.
New York Office, Architects' Bldg.
Philadelphia Office, 1524 Chestnut St.
W. A. WILLIAMS, Southern Representative
P. O. Box 322 Greenville, South Carolina

# SUN SURFACED WALLS-
## FEWER ACCIDENTS

SUN-SURFACE mill interiors with Hampden *Sunray* Mill White Oil Paint and you prevent accidents as well as protect walls.

All workers do not have good eyesight. Given more light such employees do more work and keep out of the hospital.

Hampden *Sunray* Mill White coated walls serve like flood lighting projectors of all the light which enters in the daytime, besides making night lighting more efficient and less costly.

Walls made snow white with Hampden *Sunray* Paint diffuse light like tile or porcelain. The coating is tough, smooth and sufficiently elastic to withstand excessive vibration and atmospheric changes and it may be washed without risk of injury.

*Further particulars mailed on request, also our booklet "Whitest White" which contains useful information about industrial lighting.*

**HAMPDEN PAINT & CHEMICAL CO.**

*Makers of good paint for 68 Years*

**Division E** **Springfield, Massachusetts**

Hampden
SUNRAY
MILL WHITE

## COOLEDGE HYGRADE

C THE CH LINE H

*"Best for the Southern Climate"*

**C-H Bungalow Shingle Stains**
For Shingle roofs and weather-boarding

**C-H Home Paints**
For Exterior and Interior Use

**C-H Perma White**
Interior gloss mill paint

*Let us Send Booklet and Color Card Also names of Mills and Mill Contractors that have used our paints*

**"IMMEDIATE SHIPMENTS"**

*Just write on your letter-head— "Send Your Catalog"*

**F. J. COOLEDGE AND SONS**
**ATLANTA GA. SAVANNAH**

**Manufacturers of paints, stains and varnishes**
**Jobbers of window and building glass, and wallboard**

## Ask The Man Who Hasn't One

COTTON is a member of the Audit Bureau of Circulations.

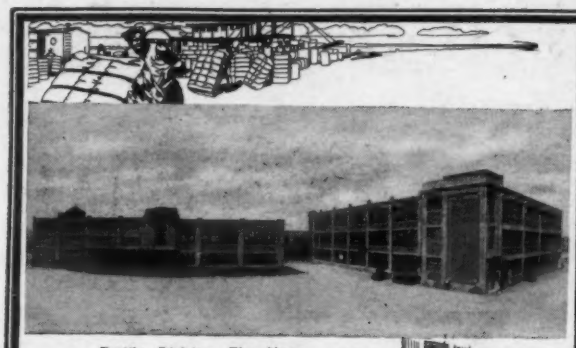
Do you understand what that means to you as an advertiser?

It means that you get a "square deal" when you buy our circulation. It means that the net paid distribution of COTTON has been verified by the only recognized authority on circulation.

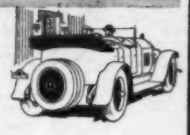
It means all that and more. It means that our circulation is "above board." We have nothing to conceal.

Facts are given in detail in the A. B. C. statements. COTTON gladly furnishes them on request. Every publication with nothing to hide can do the same.

So, ask the man who hasn't one—why?



*Textile Division, The Mason Tire & Rubber Co., Kent, Ohio*



# BUILDING Automobile Tires WITH FORESIGHT

## *Mason Tire and Rubber Company operate their own fabric mill*

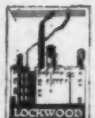
THIS is one of the few instances where automobile tire fabric and automobile tires are made in adjoining plants on the same property and under the same ownership.

With a rapidly growing production, the Mason Tire and Rubber Company had the foresight to perceive the future as well as the present advantages of operating their own fabric mill and of having it situated close to the tire plant. There were advantages of *economy*, of *quality*, of *convenience and certainty* of supply.

Having had no experience themselves with the making of cotton fabric, the Mason Tire and Rubber Company were doubly convinced of the value of having their mill planned and supervised by the most competent authorities obtainable on cotton mill construction.

The planning of this mill was a pointed case of "Building with Foresight". It was planned and built so that its present capacity can be increased five times over with a minimum of additional construction and without disturbance to the efficiency of the plant arrangement.

It is this kind of foresighted service that Lockwood, Greene & Co., Engineers, hold out to all manufacturers with building problems.




© BUILDING WITH FORESIGHT

**LOCKWOOD, GREENE & CO.**
**ENGINEERS**

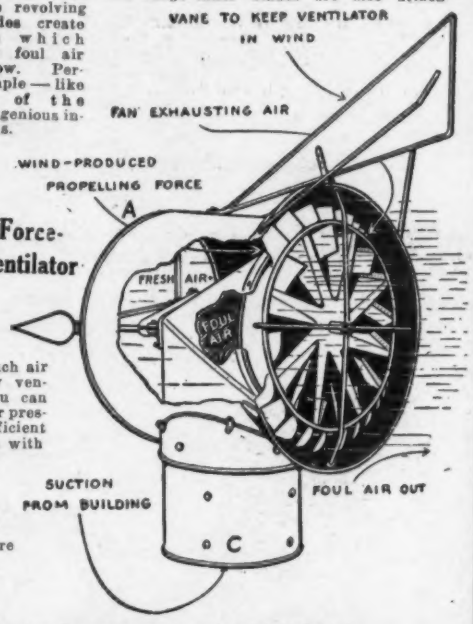
EXECUTIVE OFFICE, 60 Federal Street, BOSTON

BOSTON ATLANTA CHICAGO NEW YORK
DETROIT CLEVELAND CHARLOTTE PHILADELPHIA
LOCKWOOD, GREENE & CO. OF CANADA, LIMITED
285 Beaver Hall Hill, MONTREAL
COMPAGNIE LOCKWOOD GREENE, 47, Avenue de l'Opéra, PARIS, FRANCE



## The Wind-Mill Principle Applied to a Ventilator

Note the illustration! The fresh air passing over the funnel comes in contact with the small outer blades, thereby propelling the wheel to which the large inner blades are also attached. These revolving inner blades create a vacuum which sucks the foul air from below. Perfectly simple — like so many of the world's ingenious inventions.




**Carlisle Force-Draft Ventilator** displaces from 5 to 6 times as much air as ordinary ventilators. You can replace your present inefficient Ventilators with fewer and smaller sized "Carlisles" and get more ventilation! Write for descriptive folders.

**CARLISLE & GALE CO.**

569-577 Albany St. Boston, 18, Mass



## H. NEWTON MARSHALL CO.

**Contracting Painters**

ATLANTA BOSTON

**D. R. Hall, Southern Manager**

**301 Trust Co. of Georgia Building Atlanta, Georgia**

*Service* *Efficiency* *Low Cost*

**Goods in process carefully protected.**

***Olympia Mill, Columbia, S. C.***

*Partial List of Mills and Other Industrial Plants Now Being Painted or Recently Completed by This Company.*

Lumberton Cotton Mills, Lumberton, N. C.
Granby Mills and Village, Columbia, S. C.
Richland Mills and Village, Columbia, S. C.
Capital City Mills and Village, Columbia, S. C.
Olympia Mills and Village, Columbia, S. C.
Winnsboro Mills and Village, Winnsboro, S. C.
Wateree Mills and Village, Camden, S. C.
Addison Mills and Village, Edgefield, S. C.
LaGrange Mills and Village, LaGrange, Ga.
Dunson Mills and Village, LaGrange, Ga.
Mandeville Mills and Village, Carrollton, Ga.
Hogansville Mills and Village- Hogansville, N. C.
Bellwill Cotton Mills and Village, Wilmington, N. C.
Indian Head Mills and Village, Cardova, Ala.
Dixie Mills and Village, LaGrange, Ga.
Savannah Power Co., Savannah, Ga.

**Write us for estimates.**

# THE JOHNSON FRICTION CLUTCH

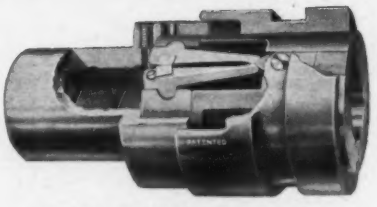
## A Better Control for Textile Machinery

You will find the Johnson Clutch a most satisfactory means of driving textile machinery. More efficient and more convenient than the tight and loose pulley. Equally desirable on motor drives.

Made in both single and double types to fit standard pulley sizes. Clean, compact and durable. Grips smoothly and is easily adjusted to any tension.

Ask for the Johnson Clutch on your new machine equipment.

*Ask for our Catalog "G"*



Single Clutch Broken Away.

**THE CARLYLE JOHNSON MACHINE CO.** MANCHESTER CONN

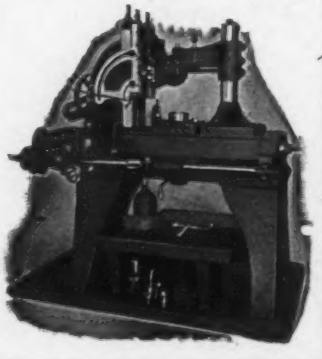
Full Automatic, Semi-Automatic and Hand Operated

## Gear Cutting Machines

*Especially adapted for use in Cotton Mills Hundreds now in use. Send for Special Circulars.*

**The D. E. Whiton Machine Co.,**

NEW LONDON, CONN.



## SAVE WASTE

Ball Bearings on the measuring rolls of slasher warpers will do it.

**AldricH MachinE Ball WorkS Bearings**

Greenwood, S. C.

## CRESSON-MORRIS CO.

**POWER TRANSMITTING MACHINERY**

## Merit Plus Recognition

*"The heights by great men reached and kept were not attained by sudden flight."*

Time, skill and effort must also proceed merit as surely in machinery as in men.

Time, skill and effort must also proceed merit in order to obtain and maintain for merit the recognition it deserves.

The great number of large installations of Cresson-Morris Power Transmitting Machinery is proof of both the merit and the recognition of the merit that nearly three score years of skill and effort have endowed it with.

**The cumulative knowledge of all this experience is always available to you in the recommendations of our engineers.**

**CRESSON-MORRIS COMPANY**

**ENGINEERS—FOUNDERS—MACHINISTS**

**PHILADELPHIA, PENNA.**

Branch Office, 141 Milk St., Boston, Mass.

20

## MAKE YOUR BELT JOINTS ONCE TO *LAST*.

The damage to belting and time spent repairing belt joints that don't hold is absolute waste.

The time lost from production while the rejoining is being done—the idle machine; the idle workmen—is a dead loss to both the beltman and the company.

No one can afford the loss of belting, time and labor that inefficient belt joints cause.

Crescent Belt Fasteners solve the belt joint problem—they make an efficient joint that holds for the entire life of the most durable belt; a joint that takes a won't-let-go grip that hard, continuous service cannot loosen; a joint that, once on, is on to **stay**.

A Crescent Joint is quickly attached. No special tools required. No punch. Hands and a hammer, that's all. The maximum strength of the belt is sustained and its longer life insured. Joint hugs pulley—runs same as endless on pulley side, insuring full, even continuous power transmission.

For effective, continuous belt service, always use Crescent Belt Fasteners.

**Write for new Booklet M-1 on Increasing Belting Efficiency.**

**CRESCENT BELT FASTENER CO.**
381 FOURTH AVE., NEW YORK.
Canadian Branch:
32 Front St., West, Toronto, Canada.
England: 32 Paradise St., Birmingham.

**CRESCENT**
*Make Good Belts Give Better Service*
**BELT FASTENERS**

*One of many Connecticut Factories Equipped with Jewell Belting*

# Jewell Belting

## 1770—1920

IN these days of large-scale production, men in charge of modern plants are giving their best thought to the standardization of both the product itself and the methods of manufacture. Power transmission in all its phases becomes more than ever a vital factor in their calculations.

It is but natural that they should find the satisfactory solution for this part of their problem in the installation of Jewell belting—belting which has rendered truly efficient service ever since machine power has driven wheel in America.

**Jewell Belting Company**
Hartford, Conn.
Western Branch: 2837 So. LaSalle St., Chicago



**Brazing—Oxy-Acetylene and Thermit**

## WELDING

Over ten years of practical experience in brazing and welding all kinds of machinery and equipment enables us to offer efficient service to the cotton and knitting mills.

Parts shipped to us welded and returned promptly.

Or wire us, and one of our first-class machinists and practical welders will come to your plant and weld your job for you.

***Boiler Welding A Specialty***

**CHATTANOOGA BRAZING & WELDING CO.**
***1309 Chestnut St., Chattanooga, Tenn.***

# A pump valve determines the efficiency of a pump

Because you can't see a pump valve work, it is very important that a valve of **known dependability** be installed. A poor pump valve will cause a pump to work inefficiently, and it may be a long time before the fact is discovered.

Jenkins Pump Valves can be installed with confidence in their satisfactory performance. They are made in various compounds for various services and in each case are guaranteed. Pure rubber of the best quality is used, and is compounded with ingredients that years of experience have taught us to be the best for each specific service.

***The Jenkins "Diamond" appears on our pump valves—it is a symbol of genuineness and your assurance of satisfaction. At all supply houses.***

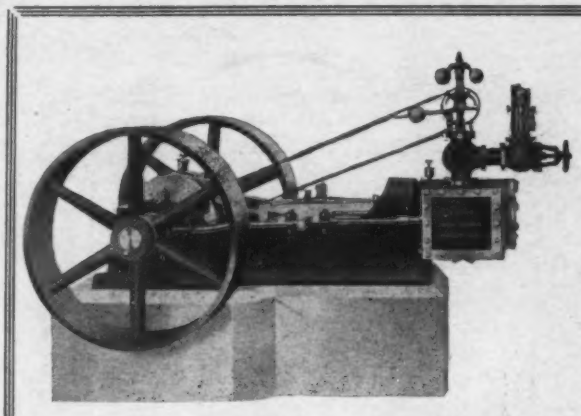
REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

**JENKINS BROS.**

New York, Boston, Philadelphia, Pittsburgh, St. Louis, Chicago, San Francisco, Washington, Montreal, Havana, London.

2209-J

Jenkins Valves SINCE 1864



**J. S. Schofield's Sons Co.**

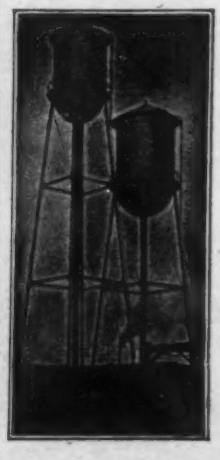
**Macon, Georgia**

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

**Heavy Castings and Wrought Iron Works.**

**TOWERS and TANKS**
**That are Built Right**



Boilers, Structural Steel Work

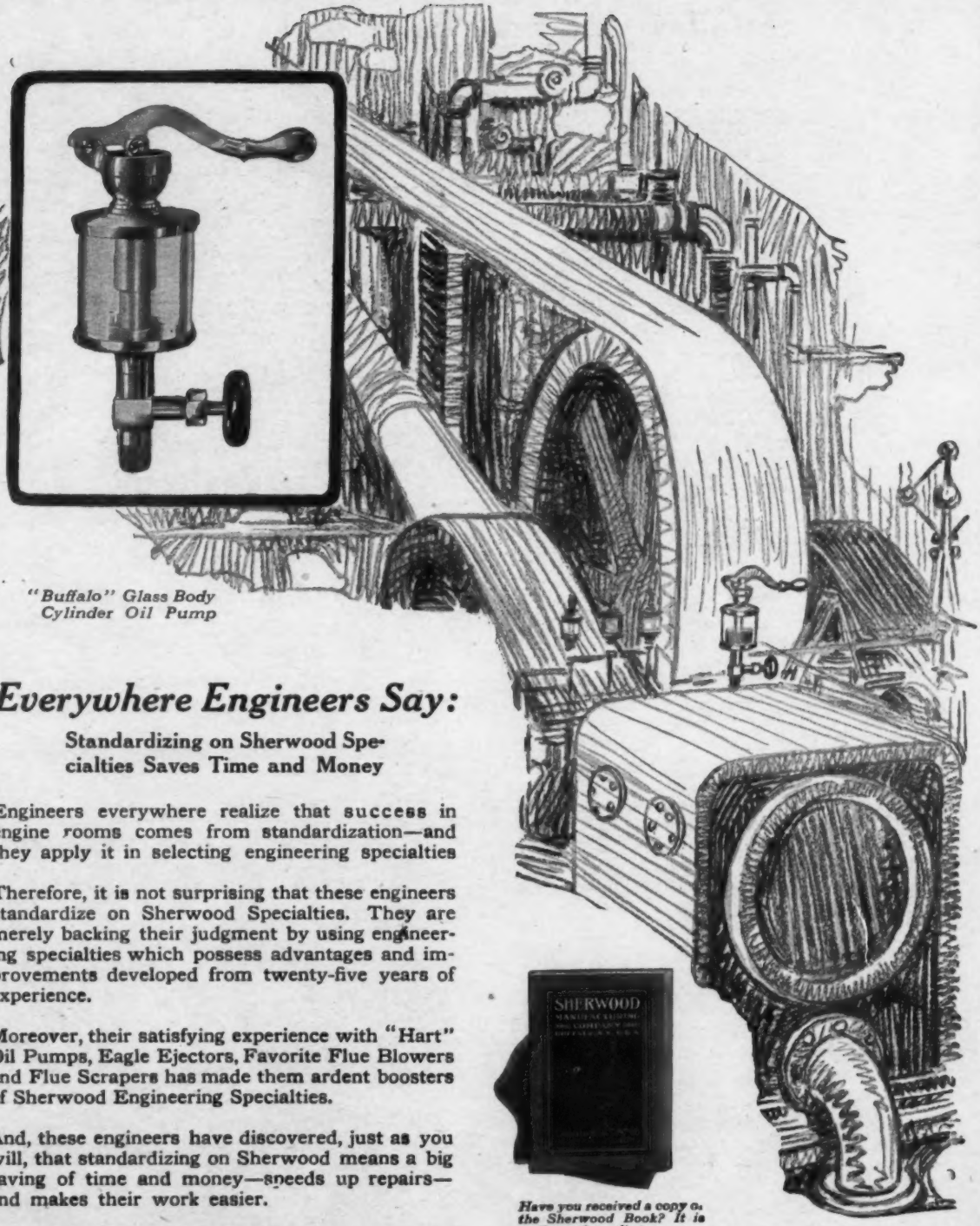
Sheet Steel and Plate Work

Boiler Tubes Castings, Etc.

Tell us what you want and let us quote prices.

**The Walsh & Weidner Boiler Co.**

Chattanooga, Tenn.



*"Buffalo" Glass Body Cylinder Oil Pump*

# *Everywhere Engineers Say:*

**Standardizing on Sherwood Specialties Saves Time and Money**

Engineers everywhere realize that success in engine rooms comes from standardization—and they apply it in selecting engineering specialties

Therefore, it is not surprising that these engineers standardize on Sherwood Specialties. They are merely backing their judgment by using engineering specialties which possess advantages and improvements developed from twenty-five years of experience.

Moreover, their satisfying experience with "Hart" Oil Pumps, Eagle Ejectors, Favorite Flue Blowers and Flue Scrapers has made them ardent boosters of Sherwood Engineering Specialties.

And, these engineers have discovered, just as you will, that standardizing on Sherwood means a big saving of time and money—speeds up repairs—and makes their work easier.




*Have you received a copy of the Sherwood Book? It is well worth reading.*

*—Write your name and address on the margin of this page, forward it to us, and we will send the Sherwood Book to you by return mail.*

C-5

**SHERWOOD MANUFACTURING COMPANY**

***Brass Founders and Finishers***

**BUFFALO, N. Y.**

# SHERWOOD

## ENGINEERING-SPECIALTIES

## Did You See These Machines in Operation At the Southern Textile Exposition?

Hendey Engine Lathe

Brown & Sharpe Automatic Gear Cutting Machine

J. E. Snyder & Son Upright Drill Press

Brown & Sharpe Milling Machine

Brown & Sharpe Tool and Cutter Grinder

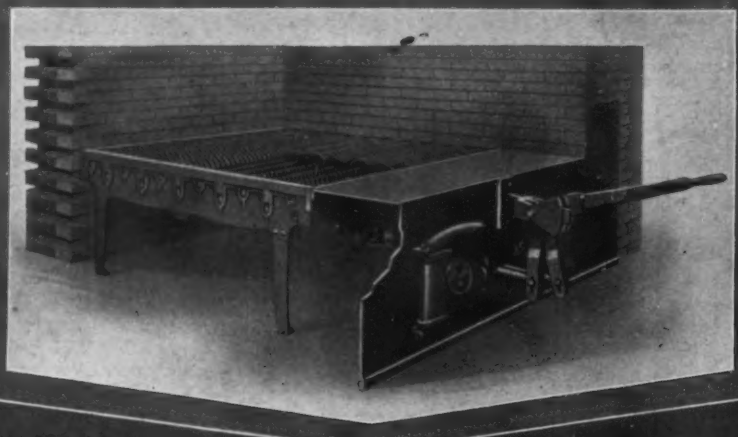
Hendey Crank Shaper

*WE SHALL BE PLEASED TO QUOTE YOU ON YOUR REQUIREMENTS*

**THE WALRAVEN CO.**

**Machinery and Mill Supplies** **Atlanta, Ga.**

AJAX GRATES "VALLEIRON" V



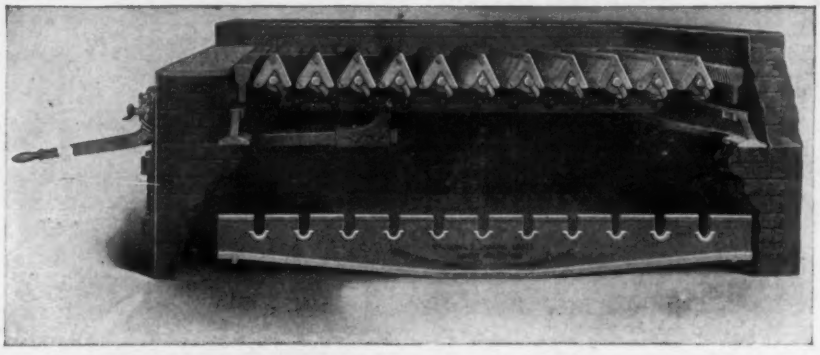
AJAX GRATES "VALLEIRON" V

# AJAX ROCKING GRATES

*If you are at all interested in Power Plants—in the costs of operation in greater efficiency—ask us for our booklet "The Economical Burning of Coal"—which explains why we guarantee the Ajax Grate to save 15% on your coal bill — to cut upkeep and labor costs, and to increase steam. A copy will be gladly mailed, without obligation, on request.*

VALLEY IRON WORKS - WILLIAMSPORT, PENNA.

# MACDONALD
## SHAKING GRATES



## PERFECT COMBUSTION WITH LESS FUEL

Here's a perfect grate that will help you to lower costs in your boiler room and produce a free steaming boiler.

There are several reasons for the superiority of the MACDONALD Shaking Grate—

1—Unrestricted air passages. 2—Fool-proof locking device. 3—Fuel cannot be wasted when grate is being shaken. 4—Powerful leverage for shaking and breaking up clinker. 5—Grates may be repaired or renewed at negligible expense by replacing top sections only. 6—Detachable top sections may be changed to give any desired air opening or spacing of grate. 7—Proper distribution of metal gives the greatest strength possible in proportion to weight of the material. 8—When shaken the maximum irregularity of depth of vibration is given without opening a wide space between sections. 9—A flat grate locked in position so that the surface cannot be left uneven or with points projecting into the fire.

Top sections which make it unnecessary to replace an entire expensive bar when a portion of it wears out. Maintenance expense is therefore cut to the bone.

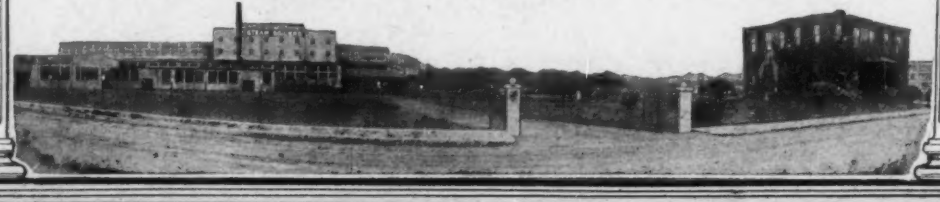
Let us tell you more about this perfect coal-saving grate, and how it will save you money

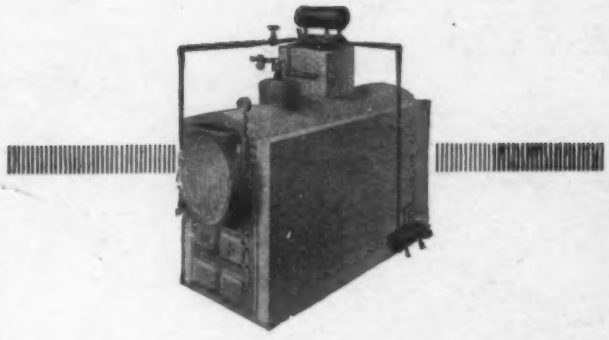
INTERNATIONAL ENGINEERING WORKS, Inc.
FRAMINGHAM. MASS.

Southern Representative,
Isaac Hardeman, Charlotte, N. C.

BOSTON
PHILADELPHIA

NEW YORK
SAN FRANCISCO





# Make Use of Your Exhaust Steam

Because it utilizes all the heat units in exhaust steam—drains the water of condensation from steam lines and steam heated equipments and returns it direct to boilers—the Morehead Back-to-Boiler System effects a fuel saving of 20 to 50 per cent—sufficient to pay for its installation often during the first few months' operation.

And with fuel prices higher—it will pay you to investigate this modern steam drainage system.

Here is a letter from a textile plant:

*Concord, N. C.*

*To Whom It May Concern:*

*We have been using the Morehead Back-to-Boiler System for the past two years, and we think it has saved us quite a bit of fuel. It is still working very satisfactory, and the upkeep is practically nothing.*

*Yours very truly,*

*Gibson Manufacturing Co.,*

*(Signed) W. B. Bruton,*
*Supt.*

The Morehead can be installed without disturbing the present operation of your power plant. Write for catalog.

**Morehead Manufacturing Co.**

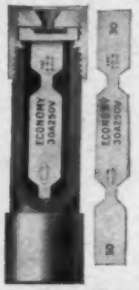
**Detroit --- --- --- Michigan**

**Canadian Morehead Mfg. Co., Woodstock, Ont. for Dominion of Canada.**

Positively Drains All Types of Steam Apparatus — Delivers Condensation And Feed Water to Boiler Under All Conditions at Maximum Temperature — Your Fuel Bills are Less

**Morehead**

**"BACK-TO-BOILER-SYSTEM"**




Ferrule Type, Economy Fuse with Economy "Drop Out" Renewal Link.

# ECONOMY *renewable* FUSES

Progressive industries using electrical energy obtain more dependable protection to lives, property and machinery—at less cost—when they discard "one time" fuse equipment for

## Economy renewable Fuses

The famous Economy "Drop Out" renewal link cuts annual fuse maintenance costs 80%.

Knife Blade Type Economy Fuse

It is the least expensive and the only portion destroyed when an Economy Fuse blows.

Economy "Drop Out" Renewal Links invariably operate at rated capacity. They are inexpensive—a reserved stock kept always on hand represents but a small investment.

The Fuse itself—fibre cartridge, end caps and the winged washer which locks the link securely in place—is used again and again.

The merits of Economy Fuses have been recognized officially, for they were the first line using inexpensive bare renewal links for restoring blown fuses to their original efficiency to be approved in all capacities by the Underwriters' Laboratories.

**Your plant needs Economy Fuses.**

***For sale by all leading electrical jobbers and dealers.***

**Economy Fuse & Mfg. Co.**

**Chicago U. S. A.**

**Also made in Canada at Montreal.**

## Quick Action

**Modern business demands it. Time is the most valuable asset of the executive.**

**STROMBERG-CARLSON**
**INTER-COMMUNICATING SYSTEMS**

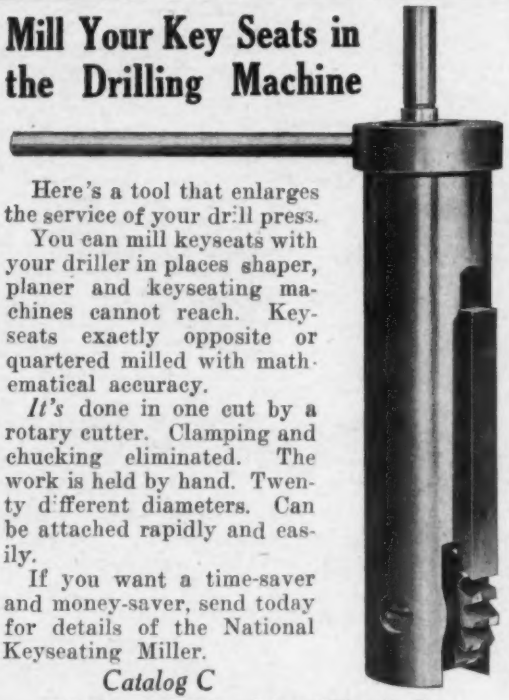
**add hours to the business day—eliminate loss of precious minutes—save endless unnecessary footsteps.**

**They are easily installed—require no switchboard or operator. Their operation is simplicity itself.**

**Push *ONE* Button *ONCE*—and Talk.**

**Dixie Electric Equipment Co.**
**INDUSTRIAL ELECTRICAL EQUIPMENT**
Interior Telephones—Fire Alarm Apparatus.
Watchman's Clock Detectors.
Electric Clocks—Riot Alarms—Code Calling Systems.
A Southern Concern—Giving Service to the South.
Data and Complete Information on Request.
37 Peters St. Bell Phone Main 826.
ATLANTA, GA.

## Mill Your Key Seats in the Drilling Machine



Here's a tool that enlarges the service of your drill press.

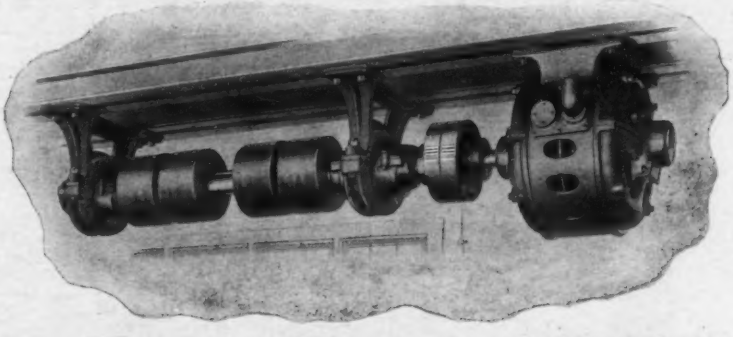
You can mill keyseats with your driller in places shaper, planer and keyseating machines cannot reach. Keyseats exactly opposite or quartered milled with mathematical accuracy.

*It's* done in one cut by a rotary cutter. Clamping and chucking eliminated. The work is held by hand. Twenty different diameters. Can be attached rapidly and easily.

If you want a time-saver and money-saver, send today for details of the National Keyseating Miller.

*Catalog C*

**National Machine Tool Co.**
2274 Spring Grove Ave., Cincinnati, O., U. S. A.
Southern Representatives
Smith-Courtney Co., Richmond, Va.
Montgomery & Crawford, Spartanburg, S. C.



# Four-Frame Textile Mill Drive

This latest Four Frame Drive with Type "AN" Squirrel Cage Motor, Flexible Coupling, two special high speed hanger bearings and special shaft works out very nicely for lining up with spinning and twisting frames that are in place but cannot be moved.

*Motors for All Textile Drives.*

# ALLIS-CHALMERS

**Milwaukee. Wis. U.S.A.**

*Speed in Service is Only Rivaled by Accuracy*
*Each Would Be Useless Without the Other*

# Unfailing Service

In the struggle and stress of modern business life every moment of delay represents a loss of time and money which cannot be regained.

When promptness, accuracy and dispatch are the vital elements in the delivery of electric equipment or supplies it is natural to turn to the Carter Electric Company for service.

This is an organization whose members are trained to meet the demands of any emergency and this organization is ready to serve you on an instant's notice.

If your requirements cover Rubber Conduit Wire, Switches, Safety Switches, Wiring Devices, Fuses, Lamps or other electric supplies, it is only a matter of a few hours before we can place them in your hands.

This is because our warehouses are always fully stocked—everything you may need and in large quantities—and with every modern facility for handling your business the Carter Electric Company pledges you **Unfailing Service.**

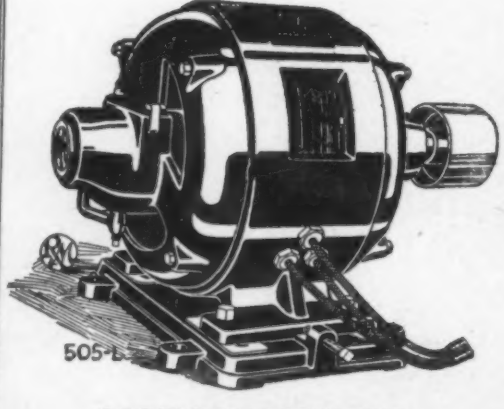
## Carter Electric Company

**63 Peachtree Street, Atlanta**

# BRYAN ELECTRIC CO.

58 EDGEWOOD AVENUE, ATLANTA, GA.

**Electric Light, Power, Telephone and Bell Wiring for Residences, Stores and Factories Estimates Furnished.**



## Rewinding for Motors, Generators

**All kinds of new and used Electrical Machinery bought, sold and exchanged**

## ALL KINDS OF ELECTRICAL WORK

MOTORS RENTED

TELEPHONE YOUR WANTS

**Local and Long Distance Ivy 1788-1790**

# SOUTHERN BUSINESS DIRECTORY

## *COTTON, WASTE, LINTERS, Etc.*

E. A. CUTTS C. S. CUTTS, SR.

**E. A. CUTTS COMPANY**

Cable Address: "CUTTS"
COTTON BROKERS
30 Bay Street, East
Savannah, Ga.
Office Phones—478—2713—Postal Phone
Long Distance—9929
Branch Office: E. A. CUTTS & SON, Augusta, Ga.

## *SUPPLIES, MISC.*

**STENCILS — METAL CHECKS — RUBBER STAMPS**

Send for Catalogue

Stencil Work for Cotton Mills Our Specialty

**SOUTHERN STAMP & STENCIL CO.**

7 W. Mitchell St.
ATLANTA
GA.

## *WELDING & REPAIRS*

**SOUTHERN WELDING & MACHINE CO.**

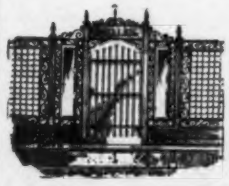
190 COURTLAND STREET ATLANTA, GA.
Gear Cutting and Machine Work.
No job too large or too small for us.
We specialize in cotton mill and oil mill welding and machine work.
*Oxy-Acetylene and Electric Welding*

Advertising conserves the Manufacturer's time by acquainting him with a service or product at his leisure long before the need for such arises.

## *CONSTRUCTION*

**Cast Iron Columns**
FOR
**COTTON MILL CONSTRUCTION**

**American Cast Iron Pipe Company**
COLUMN DEPARTMENT BIRMINGHAM, ALA.
NEW YORK OFFICE: 261 BROADWAY



**WIRE RAILINGS**
**WINDOW GUARDS**
**WIRE CLOTH**
Established 1835.
**DUFUR & CO.**
309 N. Howard St., Baltimore, Md.

**PLUMBING and HEATING**
POWER & HAND PUMPS DAIRY SUPPLIES
PROMPT SERVICE.
**HACKNEY BROTHERS CO.**
No. 6 West 5th St., Charlotte, N. C.

**J. E. ROBBINS & SONS**
**PRACTICAL WELL DRILLERS**
208 W. Coffee St.
P. O. Box 87 Phone: Long Distance 2985
Greenville, S. C.

**R. L. GOODE**
GENERAL CONTRACTOR
**Charlotte, N. C.**

**GUDE & CO., Builders**
CANDLER BLDG., - ATLANTA, GA.
All classes of buildings constructed promptly and efficiently and at reasonable prices.

established 1885

**WELLS**
HUGHES SPECIALTY
WELL DRILLING CO
CHARLESTON ATLANTA

# Commission Merchants, Yarn Dealers, Cotton Dealers, and Brokers, Etc.

H. Ray Paige, Pres. J. A. Mandeville, Vice-Pres. J. H. Schoolfield, Secy. and Treas.

## Southern Cotton Yarn Co., Inc.

1 Madison Avenue, New York City

SELLING AGENTS FOR

## SOUTHERN MILLS

Carded—Combed Yarns

4's TO 120's SINGLE AND PLY

Selling Direct to Consumer.
NEW ACCOUNTS SOLICITED.

## The Recognized Standards of Quality

# COTTON YARNS

### Our Fine Yarns Make Fine Fabrics

The manufacturers of a number of America's well known textile products can vouch for the strength, uniformity, cleanliness, and better weaving and knitting qualities of our yarns.

The yarns we spin for knitting, weaving, laces and converting, are furnished in all twists on skeins, cones, tubes and warps:

36s to 80s Single and Ply Combed Peeler Right Twist. 36s to 50s Single and Ply Double Carded Peeler, Right or Reverse Twist.

20s to 60s, 2, 3, and 4 Ply, Combed Peeler, Reverse Twist.

Our products are sold direct and exclusively through our General Sales Offices:
131 East 23d Street,
New York.
H. A. FLORSHEIM, Sales Manager
Long Distance Phone: Gramercy 812
New England Representative
H. D. Skinner,
212 Summer St. Boston, Mass.

Gray Manufacturing Co.
Arrow Mills, Inc.

Parkdale Mills, Inc.
Flint Manufacturing Co.
Arkray Mills, Inc.

Arlington Cotton Mills
Myrtle Mills, Inc.

## Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

# Financing The Crop That Clothes The World

THE floodgates of the harvest lift. Millions of bales of cotton pour into the market. The steadying influence of sound finance guides the great crop to hundreds of widely-varied consuming industries, without waste or disorder.

More money is required to finance cotton than any other crop. A combination of ample resources and 85 years' experience in meeting the complexities of cotton finance enables The National Shawmut Bank of Boston to handle cotton business with true economy, promptness and accuracy.

The directorate of this institution includes executives actively connected with the leading cotton mills of New England. Transactions involving a substantial percentage of America's cotton crops are handled here annually. Intimate knowledge of all phases of export, import and domestic cotton marketing is the foundation of the excellent service this bank renders.

*Special inquiries are cordially invited.*

## The National Shawmut Bank of Boston

**Resources far exceed two hundred mlilion dollars.**

# IF YOU NEED BANKING SERVICE

**in the South,**
**and especially in Georgia**

## You need The Citizens & Southern

*Capital and Surplus $4,500,000*

The Citizens & Southern system has completely equipped offices in Atlanta, Savannah, Macon and Augusta.

Each of these offices is connected with the others by direct private wires.

If you are a customer of either office, and want information or service of any kind from the other cities these wires and the complete organization are at your service.

Hundreds of direct correspondents all over the south makes it possible to give you practically the same service wherever you want it.

## The Citizens & Southern Bank

Atlanta—Marietta at Broad

Savannah Macon Augusta

*No account too large, none too small"*

ESTABLISHED 1872

## *H. & B. BEER*

### *NEW ORLEANS*

HENRY BEER EDGAR H. BRIGHT
J. WILLIAM BARKDULL C. MORGAN ABRAMS

MEMBERS OF

New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade

Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points

## HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

**LINEN YARNS**

For Weaving, Knitting and all Purposes.

**TURKEY RED YARNS**

For Towel Borders, Towellings and Bleaching Cloth

**Linen Jacquard Harness Twine**

And Every Description of Linen Thread and Twine

**115 Franklin Street, : NEW YORK**

## WOODWARD, BALDWIN & CO.

**DRY GOODS**

Commission Merchants

**43-45 WORTH STREET, NEW YORK**

1865 The Oldest National Bank in the Cotton States 1920

# *The* Atlanta National Bank

—and the—

## BUSINESS OUTLOOK

THE South Is Standing Upon An Underpinning of Unprecedented Financial Strength.

The period of readjustment and price deflation through which we are now passing is the logical result of the abnormal business conditions that have existed for the past few years.

In the Heart of Atlanta—
The Heart of the South.

Secretary Hester, of the New Orleans Cotton Exchange, and one of the world's foremost cotton authorities, says: "The South holds in its own hands the remedy for the temporary ailment from which it is suffering in connection with THE UNIVERSAL DROP IN PRICES."

Prices and profits have been abnormally high. Your earning capacity or your profits may be decreased, but the buying power of your dollar will increase proportionately.

There is not the slightest occasion for alarm upon the part of Southern business men or farmers. Prices for the basic products of the South will not continue to sell for a price that is below the cost of production.

It will take a little time to bring about the adjustment that is inevitable. The thing the South—and the Country—needs today is a renewal of the faith and optimism that has always enabled the American people to overcome every obstacle.

BUY WHAT YOU NEED.

BUY IT WHEN YOU NEED IT.

BUY IT AT THE MARKET PRICE.

AND DON'T TALK HARD TIMES.

If you do this, others will do it, and a natural—not a speculative demand—will be created that will assure every producer a fair return for his labor and investment.

# *The* Atlanta National Bank

**Active Designated Depository for**
**U. S. Government, State of Georgia, County of Fulton**
**and City of Atlanta**

# NEW TRAINS

*("Atlanta Owl" and "Birmingham Owl")*

**VIA**

# SEABOARD

## Between Atlanta and Birmingham

**Effective Nov. 28, 1920**

---

| | |
|---|---|
| Leave Atlanta - 1. a. m. | Lv. Birmingham 1:30 a. m. |
| Arr. Birmingham 7.50 a. m. | Arrive Atlanta - 7:50 a. m. |

Sleepers and Coaches. Sleepers open for occupancy at 9 p. m.

---

*Call on Ticket Agents for Pullman Reservations*

**OR**

**FRED GEISSLER, Asst. Gen'l Passenger Agent**

**SEABOARD AIR LINE RAILWAY**

**401 CITIZEN'S & SOUTHERN BANK BLDG.**

# TEXAS AND CALIFORNIA

If you contemplate making a trip to Texas or California this winter, ask Ticket Agent about **The West Point Route.**

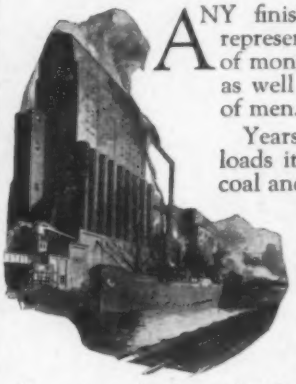
His answer will be that they have the best service, quickest time, highest grade standard and tourist sleepers, club cars, observation cars and dining cars.

See that your ticket reads via Montgomery and New Orleans.

Ask nearest Ticket Agent for rates and schedules, or communicate with the undersigned.

**J. P. BILLUPS**
**General Passenger Agent**
**The West Point Route**
**Atlanta, Ga.**

# Money Works!



ANY finished product represents the labor of money and credit as well as the labor of men.

Years before a ship loads its first cargo, coal and ore must be mined, steel fabricated, labor paid. The ship earns nothing until it is chartered. It never could have been built without the labor of men, money and credit.

The vast resources of the National Bank of Commerce in New York are an essential element in commerce and industry.

**National Bank of Commerce**
in New York
Capital, Surplus and Undivided Profits
Over Fifty-five Million Dollars

NATIONAL BANK OF COMMERCE 1839 IN NEW YORK

# *Factors*

TEXTILE BANKING COMPANY
INCORPORATED
50 Union Square New York
*Inaugurated by* GUARANTY TRUST COMPANY OF NEW YORK
*and* LIBERTY NATIONAL BANK OF NEW YORK

# Perhaps we can give you the information

The superintendent of a mill wanted a lot of special corrugated paper boxes. We told him where he could get them.
mation as to whr htaoinshrdlushdrlrdul

Another superintendent wanted information as to where he might obtain some 2,000 horsepower of boilers. We gave him the names of several possible sources of supply.

So it goes. This service is free to readers of COTTON. We are always glad to be of assistance in filling your wants. Our files contain the names of manufacturers and dealers in every article or supply yo ucan possibly want.

Let us help you find the things you need. Lo kfirst through the advertising pages of COTTON, then if what you want is not advertised write us.

We promise to give you immediate service. We know that we can be of assistance to you.

**COTTON, Grant Bldg., ATLANTA**

# Classified Opportunities.

## Positions Wanted

**OVERSEER OF BLEACHING** wants position. Age 42. Twenty years experience in bleaching all kinds of cotton piece goods, drills, twills, corsets, duck and all kinds of sheetings, narrow and wide. Best of references. Write Box 28 care of COTTON, Atlanta, Ga.

## MILL EXECUTIVE

**A splendid opportunity is offered a man who has had real executive experience as the head of a textile plant. The office offers a remarkable future for the right man. Silk experience preferred but not absolutely necessary. Address: J. A. Migel, Inc., 422 Fourth Ave., New York City.**

## Wanted—Salesmen.

Salesmen calling on the textile mills, and interested in new lines of machinery, paints, building supplies or chemicals, either as a side line or exclusively will find it profitable to write, giving experience, territory covered and other details. Correspondence strictly confidential. Cotton, 1021 Grant Building, Atlanta, Ga.

## RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

*(When replies are to be received in our care, allow four word, for box address,)*

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

*Rates for larger spaces furnished on application.*

## Miscellaneous

**S. S. STORER, M.E., C.E.**
Complete plans for
Textile Mills, Commercial Buildings, Bridges.
Personal Attention, Fees Reasonable.
Atlanta, Ga.

**Your Next Cash Book**

**The UNIVERSAL CASH BOOK** is not only the most modern, original and simple Cash Book yet devised—but the finest money can buy. Write for circular No. 42.

**UNIVERSAL SYSTEM, INCORPORATED.**
608 So. Dearborn St.
CHICAGO

## Cotton Cloth Construction Chart

Showing how to figure wages to be paid for weaving a cut of cloth. Chart gives Reed limits for different Sheds and Yarns indicate the proper construction for a good piece of cloth. Also gives Pick limits for the different fillings and is an attempt at complying with the Massachusetts Law which requires the posting of "How the price paid for weaving is figured." Price $2.00.

**G. L. WARFIELD,**
Palmer, Mass.

## For Sale

## New and Second Hand

**ENGINES**

**Corliss Automatic and Slide Valve**

**BOILERS**

**Pumps, Hoisting Engines, Gas and Gasoline Engines.**

**MACHINE TOOLS**

**Lathes, Planers, Shapers, Drill Presses, etc.**

**WOOD WORKING**

**Planers, Molders, Band Saws, etc.**

**ELEC. MACHINERY**

**Dynamos and Motors**

**AND SUPPLIES OF ALL KINDS**

**FRANK TOOMEY, Inc.,**

**127-31 N. Third St.**

**Philadelphia, - Pennsylvania**

Have you any proposition to put before the executives in the textile mills of the South? Anything to sell or buy that they may want or have? Do you want a better position or do you want a good man to fill a position?

Whatever your message, this "Classified Opportunities" section of COTTON is the logical place for the announcement of your requirements.

It's the meeting place for Employer and Employee, and a good salesman in print for anything you want to dispose of.

A little ad won't cost much. Try it for a month or so.

# Buyers' Index

**Acetylene Welding Apparatus.**
(See Welding Apparatus).

**Acetylene Gas.**
Commercial Acetylene Supply Co.
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Southern Welding & Mach. Co.
Standard Gas Products Co.
Waterhouse Welding Co.

**Accountants.**
(See Auditors and Accountants).

**Air Brakes.**
Allis-Chalmers Mfg. Co.

**Air Washers.**
American Blower Co.
Carrier Eng. Corp.
Parks-Cramer Co.
Sturtevant Co., B. F.

**Air Conditioning Systems.**
(See Humidifying Apparatus).

**Albone.**
Roessler & Hasslacher Chemical Co.

**Alkalies.**
(See Dyestuffs and Chemicals).

**Aniline Colors.**
(See Dystuffs and Chemicals).

**Anti-Chlornie.**
(See Dyestuffs and Chemicals).

**Aprons-Bib.**
Ladew & Co., Inc., Edw. R.
Smith & Furbush Machine Co.
Graton & Knight Mfg. Co.

**Architects and Engineers.**
American City Eng'g Co.
Dowman, George.
Draper, E. S.
Ferguson Co., John W.
Industrial Welfare Builders.
Lockwood, Greene & Co.
Robert & Co.
Spiker & Lose.
Sirrine, J. E.
Thompson & Binger, Inc.

**Ash Handling Machinery.**
(See Coal Handling Machinery).

**Asphalt Slate Shingles.**
(See Slate Asphalt Roofing).

**Auditors and Accountants.**
American Audit Co.
Ernst & Ernst.
Gregory & Gregory, Walter.

**Auto Trucks.**
(See Trucks—Auto).

**Automatic Controllers (Temperature).**
(See Temperature Controllers.)

**Automatic Loom Attachments.**
(See Loom Attachments).

**Automatic Feeds for Cotton.**
Proctor & Schwartz, Inc.
Saco Lowell Shops.
Sargent's Sons Corp., C. G.
Smith & Furbush Mch. Co.
Whitin Mch. Works.

**Backwashers.**
Sargent's Sons Corp., C. G.

**Automatic Scales.**
(See Scales).

**Ball Bearings.**
Aldrich Mch. Works.
Campbell Mfg. Co.
Hyatt Roller Bearing Co.
S K F Industries.
U. S. Ball Bearing Co.

**Ball Bearing Housings.**
Aldrich Mch. Works.

**Ball Bearing Top Rolls.**
Campbell Mfg. Co.

**Bale Band Buckles.**
(See Box Strapping & Buckles).

**Bale and Box Ties.**
Acme Steel Goods Co.
Lovingood Co.
Regnas Co., J. R.
Signode System, Inc.

**Baling Machines.**
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co.
Galland-Henning Mfg. Co.
Williams & Sons, I. B.
Hulme, J. S.
Saco-Lowell Shops.

**Baling Presses.**
(See Presses).

**Bandages, Tapes, Etc.**
American Textile Banding Co.

**Bands.**
(See Tapes).

**Banding Straps and Buckles.**
Acme Steel Goods Co.
Lovingood Co.
Regnas Co., J. R.
Signode System, Inc.

**Bands (Self-Tying).**
Campbell Mfg. Co.

**Banks.**
Atlanta National Bank.
Citizens & Southern Bank.
Irving National Bank.
National Bank of Commerce In New York.
National Shawmut Bank.
Textile Banking Co., Inc.

**Bars (Corrugated for Concrete Reinforcement).**
Corrugated Bar Co.

**Barometers (Mercurial).**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Barrels—Fibre.**
(See Fibre Products).

**Baskets—Mill.**
(See Boxes—Mill).

**Bath Cabinet—Shower.**
Shower Bath Cabinet Co.

**Batteries (Elec.).**
(See Storage Batteries).

**Beam Dyeing Machines.**
Cocker Mchry. & Foundry Co.

**Beam Heads (Steel).**
Mossberg Co., Frank.

**Beaming and Warping Mchry.**
(See Warpers and Warping Machinery).

**Bearings.**
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Diamond State Fibre Co.
Hyatt Roller Bearing Co.
Standard Pressed Steel Co.
S K F Industries.
U. S. Ball Bearing Co.
Valley Iron Works.

**Belting.**
American Supply Co.
Augusta Mill Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Russell Mfg. Co.
U. S. Rubber Co.
Walraven Co.
Williams & Co., I. B.

**Belting—Chain Link.**
Link-Belt Company.
Morse Chain Co.

**Belting—Rope.**
(See Rope Transmission).

**Belt Conveyors.**
Link-Belt Company.
Morse Chain Co.
Portable Machinery Co.

**Belt Dressing.**
Jos. Dixon Crucible Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Walraven Co.
Williams & Co., I. B.

**Belt Fasteners.**
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.

**Belt Hooks.**
Crescent Belt Fastener Co.

**Belt Lacing.**
Augusta Mill Supply Co.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Walraven Co.

**Belt Rivets.**
Crescent Belt Fastener Co.

**Belt Tighteners.**
Link-Belt Company.
Williams & Sons, I. B.

**Benches (Park and Playground).**
(See Playground Equipment).

**Billiard Tables, Etc.**
Brunswick-Balke-Collender Co.

**Bleacheries.**
(See Dyers, Bleachers and Finishers).

**Bleaching Kiers.**
Butterworth & Sons Co., H. W.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Machinery Co., The.

**Bleaching Machinery.**
(See Dyeing, Bleaching and Finishing Machinery).

**Bleaching, Finishing and Sizing Materials.**
(See Finishing Materials).

**Blowers and Blower Systems.**
American Blower Co.
Carlisle & Gale Co.
Carrier Eng. Corp.
General Electric Co.
Perkins & Son, B. F.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

**Boards—Fibre.**
Diamond State Fibre Co.

**Boards—Form.**
Pearson, Jos. T.

**Bobbins.**
Draper Corporation.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.
Shambow Shuttle Co.
Whitin Machine Works.

**Bobbin Heads.**
Diamond State Fibre Co.

**Boilers.**
International Engineering Works, Inc.
Jones Machinery Corp.
Lombard Iron Works & Supply Co.
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

**Boiler Feed Water Purification.**
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Refinite Co.
Scaife & Sons, Wm. B.

**Boiler Room Fittings & Supplies.**
Crane Co.
International Engineering Co.
Jenkins Bros.
Lunkenheimer Co.

**Boiler Grates and Stokers.**
(See Grates and Stokers).

**Boiler Graphite.**
Jos. Dixon Crucible Co.

**Box Strapping and Tie Buckles.**
(See Banding Straps & Buckles).

**Boxes—Mill.**
Diamond State Fibre Co.
Hightower Box & Tank Co.
Keystone Fibre Co.
Lane & Bros., W. T.
Rogers Fibre Co.
Standard Fibre Co.

**Boxes—Packing.**
(See Packing Boxes).

**Bowling Alleys, Etc.**
Brunswick-Balke-Collender Co.

**Braid.**
(See Tapes).

**Brake Linings.**
Diamond State Fibre Co.

**Brazing.**
(See Welding).

**Brokers—Cotton.**
(See Cotton Dealers & Brokers).

**Brokers—Stock.**
(See Stocks and Bonds).

Atlanta Brush Co.

**Brushes—Mill.**

**Brushes—Commutator.**
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

**Buckets and Pails—Mill.**
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

**Buckets—Elevator and Grab.**
Link-Belt Company.

**Buckles—Cotton Tie.**
(See Box Strapping and Ties).

**Building Contractors.**
(See Contractors).

**Buildings—Portable.**
Dowman, George.
Lockwood, Greene & Co.

**Building Material.**
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Barrett Co., The.
Birmingham Slag Co.
Corrugated Bar Co.
Detroit Steel Products Co.
Dowman, George.
Dufur & Co.
Kirkpatrick Lumber & Timber Co.
Lockwood, Green & Co,
Southern Cypress Mfg. Asso.

**Bungalows.**
(See Houses—Ready Built).

**Burr Pickers.**
Sargent's Sons, C. G.
Smith & Furbush Machine Co.

**Bushings.**
Diamond State Fibre Co.
Southern Spindle & Flyer Co.

**Cabinets.**
(See Lockers).

**Calenders.**
Butterworth & Sons Co., H. W.
Textile Finishing Machinery Co.

**Calender Rolls.**
Campbell Mfg. Co.
Butterworth & Sons Co., H. W.
Roy & Son, B. S.
Perkins & Son, Inc., B. F.
Textile Finishing Machinery Co.

**Calling System—Inter-Telephone.**
Carter Electric Co.

**Cans—Roving.**
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

**Canvas Lugs.**
Augusta Mill Supply Co.

**Cars and Trucks—Fibre.**
(See Trucks).

**Car Unloaders.**
Portable Machinery Co.

**Carbonizing Machines.**
Cocker Mch. & Fdry Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons & Co., C. G.
Textile Finishing Machinery Co., The.

**Carding Machinery.**
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

**Card Clothing.**
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

**Card Feeds.**
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Whitin Machine Co.

# PIEDMONT DIXIE PERFECT DRIVE

## SPINNING MACHINE BANDS

The Piedmont Dixie Perfect Drive spinning bands have been thoroughly tried out in several mills for the last two to three years.

Mills now using these bands report saving of 33 1-3 per cent. in expense "to say nothing about the saving in waste from soft bobbins." They also report them "easier and quicker to put on than the old type band."

We offer to the trade a money saving device.

IT IS NO EXPERIMENT LET US TELL YOU MORE

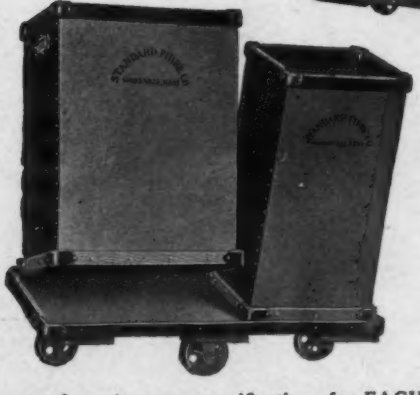
***Campbell Manufacturing Company***

**Main Office**
**Slater Building**
**Worcester, Mass.**

**Factory**
**Barre Plains**
**Massachusetts**

**"The BEST Receptacles Made?"**

**"YES—and The Best That Can Be Made."**



**We aim constantly to improve specifications for EACH TYPE of fibre containers.**
**Quotations, etc., upon application.**

## STANDARD FIBRE CO.

**MILLER STREET SOMERVILLE, MASSACHUSETTS**

# BUYERS' INDEX—Continued.

**Card Grinding Machinery.**
Roy & Son Co., B. S.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Carpet Machinery.**
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Wks.
Proctor & Schwartz, Inc.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

**Carrier Aprons.**
(See Aprons).

**Cases—Wooden.**
(See Boxes).

**Casement Window Hardware.**
Dowman, George.
Richards-Wilcox Mfg. Co.

**Castings.**
American Cast Iron Pipe Co.
Cresson-Morris Co.
Lombard Foundry & Mch. Co.
Valley Iron Works.
Walsh & Weidner Boiler Co.

**Cast Iron Columns.**
American Cast Iron Pipe Co.

**Caustic Soda.**
(See Bleaching Materials).

**Cement Machinery.**
Allis-Chalmers Mfg. Co.

**Cement Reinforcement.**
Birmingham Slag Co.
Corrugated Bar Co.

**Cement and Brick Coating.**
Cooledge & Sons, F. J.
Dixon Crucible Co., Jos.
Peaslee-Gaulbert Co., Inc.
Patterson-Sargent Co.
Tropical Paint Co.
Wadsworth Howland & Co., Inc.

**Centrifugals.**
Cresson-Morris Co.

**Chain Drives.**
(See Belting—Chain Link).

**Chain—Block, Bicycle, Auto, Engine, Agricultural, Etc.)**
Morse Chain Co.

**Chairs and Stools.**
Pick & Sons, Albert.
Reischmann Co.
Sani Products Co.
Wright Co.

**Chemicals.**
(See Dyestuffs and Chemicals).

**Chlorine Gas.**
Electro Bleaching Gas Co.

**Cleaning Machine—Suction.**
United Electric Co.

**Clocks—Hank, Etc.**
(See Counters).

**Clocks—Time.**
Eco Clock Co.

**Clocks—Watchman.**
Eco Clock Co.
Chicago Watchman Clock Co.
Dixie Electric Equip. Co.

**Closets—Water.**
(See Toilets).

**Cloth Cutters.**
Firsching, J. A.
Wildman Mfg. Co.

**Cloth Room Machinery.**
Butterworth, H. W., & Sons Co.
Firsching, J. A.
Saco-Lowell Shops.
Scott & Co., Henry L.
Textile Finishing Machinery Co.
Wildman Mfg. Co.

**Cloth Shrinking Machinery.**
Reliance Machine Works.

**Cloth Testers.**
Scott & Co., Henry L.

**Cloth Winders.**
(See Winders).

**Clutches—Friction.**
Carlyle-Johnson Machine Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.

**Clutch Linings.**
Diamond State Fibre Co.

**Coal.**
U. S. Fuel Corp.

**Coal Dryers—Centrifugal.**
Link-Belt Company.
Portable Machinery Co.

**Coal Tar Disinfectants.**
(See Disinfectants).

**Cocks.**
(See Valves).

**Color Pails.**
(See Buckets—Mill).

**Color Testers.**
Atlas Electric Devices Co.

**Comb Aprons.**
(See Aprons).

**Commission Merchants & Dealers.**
(See Cotton Cloth Commission Merchants).

**Compressors—Air.**
Allis-Chalmers Mfg. Co.
General Electric Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Walraven Co., The.

**Concrete Reinforcement.**
Birmingham Slag Co.
Corrugated Bar Co.

**Condensers.**
Allis-Chalmers Mfg. Co.
Seeger Machine Tool Co.

**Conduits.**
Diamond State Fibre Co.

**Condulets.**
Crouse-Hinds Co.

**Connectors—Frankel Solderless.**
Westinghouse Elec. & Mfg. Co.

**Consulting Engineers.**
(See Architects and Engineers).

**Contractors and Engineers—Building.**
Aberthaw Construction Co.
American City Eng'g Co.
Dowman, George.
Ferguson Co., Jno. W.
Fonda Organization, The E. A.
Goode, R. L.
Gude & Co.
Robbins & Sons, J. E.
Sniker & Lose.
Thompson & Binger.

**Contractors—Electrical.**
(See Electrical Engineers.

**Contractors—Painting.**
Marshall Co., H. Newton.

**Controlling Instruments—Temperature.**
General Electric Co.
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Conveyors—Belt.**
(See Belt Conveyors).

**Conveying Machinery.**
American Supply Co.
Colling, J. D.
Cresson-Morris Co.
Hulme, J. S.
Link-Belt Co
Morse Chain Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Portable Machinery Co
Richards-Wilcox Mfg. Co.
Schofield Wm. Co.
Seeger Machine Tool Co.
Walraven Co.
Valley Iron Works.

**Conveyors—Portable.**
Portable Machinery Co.

**Coolers.**
(See Humidifying Apparatus.)

**Coolers—Water.**
(See Water Coolers).

**Cooling Towers.**
(See Tanks and Towers).

**Copper Stamps and Stencils.**
(See Stamps, Stencils, Etc.)

**Cordage Machinery.**
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

**Corrugated Bars.**
Corrugated Bar Co.

**Cotton Yarn and Cloth Commission Merchants and Dealers.**
Carver-Beaver Yarn Co., Inc.
Fawcett, Hughes.
Florsheim H. A.
Hunter Mfg. & Comm. Co.
Iselin & Co., Wm.
Southern Cotton Yarn Co.
Weimar Bros.
Woodward Baldwin & Co.

**Cotton Dealers and Brokers.**
Beer, H. & B.
Cutts, E. A.

**Cotton Mill Machinery and Supplies.**
Augusta Mill Supply Co.
Barber-Colman Co.
Butterworth & Sons, H. W.
Cocker Mach. & Foundry Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Firsching, J. A.
Fletcher Works.
Greist Mfg. Co.
Greenville Spool & Mfg. Co.
Howard & Bullough.
Jones Mchry. Corp.
Mason Machine Works.
Phila. Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Slaughter Mchry. Co., G. G.
Smith & Furbush Mach. Co.
Stafford Co.
Steel Heddle Mfg. Co.
Terrell Machine Co.
Textile Fininshing Machinery Co.
Universal Winding Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

**Cotton Tape Loom.**
Fletcher Works.
Schaum & Uhlinger.

**Cotton Yarn Mills.**
(See Yarn Manufacturers).

**Counters—Revolution, Hank, Pick, Etc.**
Veeder Mfg. Co.
Precision Machine Co.

**Counters—Restaurant.**
(See Restaurant Equipment.)

**Couuling—Shaft.**
Chicago Pulley & Shafting Co.
Cresson-Morris Co.

**Covers—Rollers.**
Diamond State Fibre Co.

**Cranes.**
(See Hoists).

**Crayons.**
Dixon Crucible Co., Jos.
Lovingood Co.
Lowell Crayon Co.
Regnas & Co., J. R.

**Creosote Oil and Creosoting.**
Gulf States Creosoting Co.

**Crushing Machinery.**
Allis-Chalmers Mfg. Co.

**Cutters—Cloth.**
(See Cloth Cutters).

**Cypress Lumber.**
Southern Cypress Mfg. Asso.

**Cutters—Thread.**
(See Thread Cutters).

**Dairy Supplies.**
Dairy & Farm Supply Co.
Hackney Bros. Co.

**Deep Wells and Supplies.**
Hughes Specialty Well Drilling Co.

**Dehumidifying.**
Sturtevant Co., B. F.

**Delivery Cases.**
(See Boxes—Packing).

**Dial Scales.**
(See Scales).

**Dies—Steel.**
(See Stamps, Stencils, Etc.).

**Discs—Fibre.**
Diamond State Fibre Co.

**Dishes and Glassware.**
Chattanooga Queensware Co.
Pick & Sons, Albert.
Sani Products Co.
Wright Mfg. Co.

**Disinfectants.**
Barrett Co., The
Sanitas Co.

**Dobby Chains.**
Crompton & Knowles Loom Wks.
Whitin Machine Works.

**Doffing Boxes—Mill.**
(See Boxes—Mill).

**Doffing Cars.**
(See Cars).

**Door Closers and Checks.**
Richards-Wilcox Mfg. Co.

**Door Hangers.**
Dowman, George.
Richards-Wilcox Mfg. Co.

**Door Mats—Steel.**
Acme Steel Goods Co.
Lovingood Co.
Regnas & Co., J. R.

**Draft Gauges.**
(See Gauges—Draft).

**Drawing Frames.**
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

**Drills—Electric.**
(See Electric Machinery).

**Drinking Fountains.**
(See Fountains—Drinking).

**Drop Wires.**
Greist Mfg. Co.
Steel Heddle Mfg. Co.

**Drying Apparatus.**
New York Blower Co.
Sturtevant Co., B. F.

**Drying Forms—Hosiery.**
Pearson, Jos. T.

**Drying Machinery.**
American Laundry Mchry. Co.
Butterworth, H. W., & Sons Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

**Dust Collectors.**
(See Blowers and Blowing Systems).

**Dusting Machinery.**
Schofield Co., Wm.
Smith & Furbush Mach. Co.

**Dyers, Bleachers and Finishers.**
American Processing Co.
King, Habersham.

**Dyeing, Bleaching, Finishing and Printing Machinery.**
American Laundry Mchry. Co.
Atlas Electric Devices Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Hulme, J. S.
Permutit Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Refinite Co.
Reliance Machine Works.
Rome Mch. & Fdry. Co.
Schaum & Uhlinger.
Textile Finishing Machinery Co. The.
Tolhurst Machine Works.

**Dye Sticks.**
Phila. Drying Machinery Co.

**Dyestuffs and Chemicals.**
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Dow Chemical Co.
Du Pont de Nemours & So., E. I.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Hemingway, Inc., Frank.
Kali Mfg. Co.
Klipatein & Co., A.
Lewis, John D.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
National Oil Products Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Sonneborn Sons, Inc., L.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.
Zavon Co., Inc.

**Electric Cleaning System—Suction.**
United Electric Co.

**Ejectors.**
Sherwood Mfg. Co.

**Electric Dynamos and Motors.**
See Motors and Generators).

**Electric Fans.**
(See Fans—Electric).

**Electric Lamps.**
(See Lamps).

**Electric Lamp Guards.**
Flexible Steel Lacing Co.

**Electrical Engineers and Contractors.**
Dixie Electrical Equipment Co.
Huntington & Guerry, Inc.

**Electrical Machinery and Supplies.**
Allis-Chalmers Mfg. Co.
Atlas Electric Devices Co.
Benjamin Electric Co.
Bryan Electric Co.

# Guaranteed Disinfectants—What They Mean to You

**A New Way of Selling Disinfectants**

Sanitas coal tar disinfectants now carry, on every package, the germ killing strength of the product as compared to carbolic acid. And further—each invoice is accompanied by a signed guarantee that the disinfectant is of the strength specified.

What does this mean to you? Simply this—disinfectants can now be purchased on the same sound basis that your other purchases are made.

Price, odor, appearance or even a chemical analysis give little indication of the actual efficiency of coal tar disinfectants. The true test of coal tar preparation is its action on germ life. The relative value of coal tar preparations therefore, lies in their respective germ killing power.

Coal tar disinfectants are not all alike. Some are not as strong as carbolic acid—others are 20 times more powerful. Yet the average user is unable to distinguish one from the other. But it is essential that the strength of a disinfectant be known—not only to insure protection against disease but to insure a preparation of the quality that has been paid for.

That is why certain germicidal tests are now employed for determining the value of coal tar disinfectants. These tests give the exact germ killing power of the product as compared to carbolic acid which is used as the standard of measurement.

Disinfectants on a guaranteed basis is possibly only when they are manufactured under the constant control of a Bacteriological Laboratory. But this is the only basis on which they should be purchased.

Sanitas coal tar disinfectants are guaranteed because each batch manufactured in the Sanitas Bacteriological Laboratory to make certain it comes up to the required strength before the product is approved for shipment.

Sanitas coal tar disinfectants can be purchased with guaranteed carbolic acid coefficients ranging from 2 to 20.

**A copy of "Disinfectant Facts For the Practical Buyer" is yours for the asking. It should interest every user of disinfectants.**

Southern Representative
H. O. Wilkinson
Box 233, Atlanta, Ga.

**The Sanitas Company**
INCORPORATED
**33 Keap St., Brooklyn, N. Y.**

SANITAS
*Guaranteed Products*
Disinfectants
Humidifying Liquids

# UNITED PRODUCTS

AMERICAN MADE — UCPC — PROMPT SHIPMENT

SULPHUR NAVY BLUE U. C. P.

The Best Money Value Colors

SULPHUR BLACKS JET OR BLUE SHADES

VELVETEEN

**THE MOST EFFICIENT AND ECONOMICAL BOIL-OFF OR FINISH FOR RAW STOCK OR WARPS**

## United Chemical Products Corporation

*Importers, Exporters and Manufacturers*

**York & Colgate Sts., Jersey City, N. J.**

*INQUIRIES SOLICITED*

Southern Office, Realty Bldg., Charlotte, N. C.

Representatives :

R. T. GRANT, Charlotte, N. C.

B. R. DABBS, Atlanta, Ga.

# BUYERS' INDEX—Continued.

Carter Electric Co.
Crouse-Hinds Co.
Cutter Works, George.
Dixie Electrical Equipment Co.
Economy Fuse & Fuse Co.
General Electric Co.
Hulme, J. S.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Slaughter Mchry. Co., G. G.
United Electric Co.
Walraven Co., The.
Walsh & Weidner Boiler Co.
Westinghouse Elec. & Mfg. Co.

**Electrical Repairing—all kinds.**
Bryan Electric Co.
Dixie Electrical Equipment Co.

**Electric Tractors and Trucks.**
(See Tractors & Trucks—Elec).

**Elevators—Portable.**
Collins, J. D.
Lovingood Co.

**Elevators.**
Link-Belt Company.
Seeger Machine Tool Co.

**Enamel—Mill White.**
(See Paint).

**Engineers—Mill.**
(See Architects).

**Engines—Oil, Gas and Gasoline.**
Seeger Machine Tool Co.

**Engines—Steam.**
Allis-Chalmers Mfg. Co.
Jones Mchry. Corp.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

**Engine Room Appliances and Supplies.**
Crane Co.
Cutter Co., George.
Graton & Knight Mfg. Co.
Jenkins Bros.
Lunkenheimer Co.
Slaughter Mchry. Co., G. G.
Sherwood Mfg. Co.
Walraven Co.

**Exporters—Cotton.**
(See Brokers).

**Extractors—Hydro.**
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

**Fans—Electric.**
Allis-Chalmers Mfg. Co.
American Blower Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

**Fans—Conveying, Power and Exhaust.**
(See Blowers and Blowing Systems).

**Fasteners—Belt.**
(See Belt Fasteners).

**Feed Water Purifiers.**
(See Boiler Feed Water Purification).

**Felting Machinery.**
Smith & Furbush Mch. Co.

**Fence—Steel and Iron.**
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.

**Fibre Products.**
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

**Filters—Water.**
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Refinite Co.
Scaife & Sons Co., Wm. B.

**Filters—Oil Removal.**
Permutit Co.
Sherwood Mfg. Co.

**Filters—Sand.**
Permutit Co.

**Finishing.**
(See Dyers, Bleachers and Finishers).

**Finishing, Bleaching and Sizing Materials.**
Althouse Chemical Co.
Atlantic Dyestuff Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Barrett Co.
Borne, Schrymser Co.
Bosson & Lane.
Corn Products Refining Co.
Dobbins Soap Mfg. Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Keever Starch Co.
Klipstein & Co., A.
National Oil Products Co.
Newport Chemical Works.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Co.
Sonnebern Sons, Inc., L.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques.
Zavon Co., Inc.

**Fire Alarm Apparatus.**
Dixie Electric Equip. Co.

**Fire Doors and Hardware.**
Dowman, George.
Richards-Wilcox Mfg. Co.

**Fire Hose.**
(See Hose—Fire).

**Fire Protecting Paint.**
(See Paint).

**First Aid Room Equipment.**
(See Hospital Equipment).

**Flexible Couplings.**
Cresson-Morris Co.

**Flood Lights—Electric.**
Crouse-Hinds Co.
General Electric Co.

**Flooring—Hardwood.**
Kirkpatrick Lumber & Tim. Co.
Nashville Hardwood Flooring Co.
Southern Cypress Mfg. Co.

**Floor Scrubbing Machine.**
American Scrubbing Equip. Co.

**Fluted Rolls.**
Campbell Mfg. Co.
Howard & Bullough.
Perkins & Son, B. F.
Saco-Lowell Shops.
Schofield & Sons, J. S.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

**Flyers.**
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

**Founders.**
Cresson-Morris Co.
Lombard Fdry. & Mch. Works.

**Fountains—Drinking.**
Central Brass Mfg. Co.
Crane Co.
Rundle-Spence Mfg. Co.
Southern States Supply Co.

**Friction Clutches.**
(See Clutches—Friction).

**Fuel.**
(See Coal).

**Fuses.**
(See Elec. Mchy. and Supplies).

**Garage Doors and Door Hardware.**
Dowman, George.
Richards-Wilcox Mfg. Co.

**Garnett Machines.**
Roy & Son Co., B. S.
Smith & Furbush Mach. Co.

**Gas Engines.**
(See Engines—Gas).

**Gaskets.**
Diamond State Fibre Co.
Graton & Knight Mfg. Co.

**Gauge Cocks.**
Lunkenheimer Co.

**Gauges—Draft.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Gauges—Mercury Column Vacuum.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Gauge—Oil.**
Lunkenheimer Co.

**Gauges—Pressure.**
Tagliabue Mfg. Co., C. J.

**Gauges—Recording.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Gauges—Water.**
Lunkenheimer Co.

**Gears—Silent.**
Diamond State Fibre Co.
General Electric Co.
Link-Belt Company.
Morse Chain Co.

**Gear Cutting and Cutters.**
Cresson-Morris Co.
Southern Welding & Machine Co.
Whitin Machine Co., D. E.

**Gear Pullers.**
General Electric Co.
Greb Co., Inc.

**Generators—Electric.**
(See Motors and Generators).

**Glassware and Dishes.**
(See Dishes).

**Governors—Pressure.**
Tagliabue Mfg. Co., C. J.

**Governors—Pump.**
General Electric Co.
Tagliabue Mfg. Co., C. J.

**Graphite Products.**
Dixon Crucible Co., Jos.

**Grates—Boiler.**
International Eng. Works.
Lombard Fdry. & Mch. Co.

**Grates—Mechanical.**
(See Stokers).

**Grease.**
(See Lubricants).

**Grease Cups.**
(See Lubricators).

**Green Houses.**
Hulme, J. S.

**Grindstones.**
Richards-Wilcox Mfg. Co.

**Grinders—Card, Cylinder, Roll, Napper and Garnet.**
(See Card Grinding Machinery).

**Guards—Electric Lamp.**
Flexible Steel Lacing Co.

**Guides—Thread.**
Mitchell-Bissell Co.
Palmer Co., E. I.

**Gums.**
(See Finishing and Sizing Materials).

**Guy Anchors.**
Crouse-Hinds Co.

**Gymnasium Apparatus.**
Medart Mfg. Co., Fred.

**Hangers.**
(See Shafting and Hangers).

**Harness—Loom.**
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Greist Mfg. Co.
Garland Mfg. Co.

**Heads—Bobbin and Spool.**
Diamond State Fibre Co.

**Heating and Ventilating Apparatus.**
(See Ventilating Apparatus).

**Heddles.**
Crompton & Knowles Loom Wks.
Draper Corporation.
Steel Heddle Mfg. Co.

**Heddle Frames.**
Crompton & Knowles Loom Wks.
Steel Heddle Mfg. Co.

**Hinges and Butts.**
McKinney Mfg. Co.

**Hoists.**
Hulme, J. S.
Link-Belt Company.
Morse Chain Co.
Seeger Machine Tool Co.
Walraven Co.

**Hose—Fire.**
Collins, J. D.
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

**Hosiery Dyeing Machinery.**
Cocker Mach. & Fdry. Co.
Rome Mach. & Fdry. Co.

**Hosiery Finishing Boards.**
(See Boards).

**Hosiery Forms.**
(See Drying Forms).

**Hosiery Yarns.**
(See Yarn Manufacturers).

**Hospital Equipment.**
Thomas Co., F. H.
Sani Products Co.
Wright Co.

**Hotels.**
Sinton.

**Houses—Ready-Made.**
Dowman, George.
Tuxbury Lumber Co.

**Humidifying Apparatus.**
American Blower Co.
Carrier Eng. Corp.
Parks-Cramer Co.
Sturtevant Co., B. F.

**Humidity Indicating Instruments.**
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Hydraulic Turbines.**
(See Turbines—Steam).

**Hydro Extractors.**
(See Extractors).

**Hydrometers.**
Taylor Instrument Co.

**Hygrometers.**
Taylor Instrument Co.

**Hygrodeiks.**
Taylor Instrument Co.

**Indicating and Recording Instruments and Thermometers.**
General Electric Co.
Powers Regulator Co.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

**Indigo.**
(See Dyestuffs and Chemicals).

**Industrial Relationship Service.**
Sherman Service, Inc.

**Injectors.**
Lunkenheimer Co.
Sherwood Mfg. Co.

**Insulation—Vulcanized Fibre.**
Diamond State Fibre Co.

**Insurance.**
Miller Indemnity Underwriters.

**Ink—Stencil and Marking.**
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

**Iron Work—Ornamental.**
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.
Dufur & Co.
Lombard Iron Works & Supply Co.

**Jacks.**
Paulus, Chas. B.

**Jacquards.**
Crompton & Knowles Loom Wks.

**Jerker Straps.**
Augusta Mill Supply Co.

**Jute Bagging Machine.**
Smith & Furbush Machine Co.

**Kettles—Size.**
(See Size Kettles).

**Kettles—Soda.**
Lombard Iron Works & Sup. Co.

**Kiers.**
(See Bleacher Kiers).

**Knit Goods Specialties.**
Knit Goods Specialty Co.

**Knit Goods.**
(See Cotton Cloth Commission Merchants and Dealers).

**Knit Goods Washers.**
(See Washers—Cloth).

**Knitting Machinery and Supplies.**
Adams Co., Geo. H.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Scott & Williams.
Wildman Mfg. Co.

**Laboratory Instruments and Thermometers.**
Tagliabue Mfg. Co., C. J.

**Lacing—Belt.**
(See Belt Lacing).

**Lamps—Incandescent and Arc.**
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
Crouse-Hinds Co.
Cutter Co., George.
General Electric Co.
Jones Mchry. Corp.
Walraven Co.
Westinghouse Lamp Co.

**Lamp Guards—Key Locking.**
Flexible Steel Lacing Co.

**Lamp Reflectors.**
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
Crouse-Hinds Co.
Cutter Co., George.
Ivanhoe-Regent Works.

**Landscape Architects.**
(See Village Architects).

**Lappers.**
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Latch Needles.**
Paulus, Chas. B.

# Over 350 Cotton Mills are Saving Money with Standard Welding Apparatus

More and more mills are realizing the uselessness of spending their good money for new machines and parts, when the broken parts can be made as good as new by welding. For example, a cost sheet from one mill using Standard Welding Apparatus covering a period of one year is as follows:

| Department | Value of Parts if Purchased New | Total cost of welding, including supplies, labor, etc. | Actual saving Over New Parts |
|---|---|---|---|
| Weaving Room | $1,835.43 | $864.33 | $971.10 |
| Card and Waste Room | 385.35 | | |
| Spinning and Spooling Room | 90.80 | | |
| Slashing Dept. | 53.75 | 576.22 | 495.58 |
| Cloth Room | 45.15 | | |
| Machine Shop | 502.50 | | |
| Miscellaneous | 62.25 | | |
| TOTAL | $2,907.23 | $1,440.55 | $1,466.68 |

We not only supply the machine, and accessories, but we have an oxygen service second to none. Gas and supplies can be handled within a few hours after receipt of order. Shipments can be made promptly from Atlanta, Chattanooga or Gretna, Louisiana.

*Our new oxygen plant in Atlanta, greatly increasing our output and facilities for service.*

We also have a corps of expert welders ready to come to your plant on a moment's notice to handle unusual breakdowns too big for your mechanics, or to teach your men how to use the apparatus.

***WRITE, WIRE, OR TELEPHONE US.***

**Standard Gas Products Company**
(INCORPORATED)
**Main Office Atlanta, Ga. Gretna, La. Chattanooga, Tenn.**

## Wheels or Gears Come Off Quick and Clean

There will be no more back-breaking labor, no more damaged wheels or gears, when you take them off the shaft by means of the

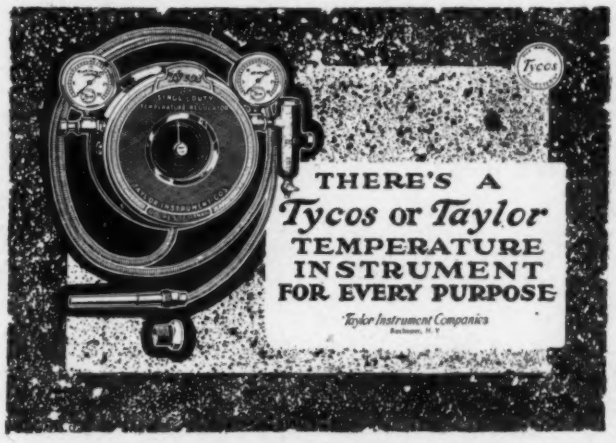
**GREB AUTOMATIC GRIP PULLER**
GREB PATENT

which is the best tool made for the purpose, and can be used for removing wheels, gears, commutators, transmissions, pulleys, etc.

Strong, simple and trouble-proof. Adjusts itself instantly and locks in any position. Capacity 1 to 18".

Sent on 10 days' trial, and if it doesn't prove indispensable, your money will be refunded. Write today for bulletin and prices.

**THE GREB CO. 81 State St. Boston, Mass.**



"Every day a good Day"

# You CAN MANUFACTURE WEATHER

Humidification-Dehumidification
Ventilation-Purification-Drying

**Carrier Engineering Corporation**
39 Cortlandt Street-New York
Boston Buffalo Philadelphia Chicago

# HOTEL Sinton

## CINCINNATI

*THE courtesy of the Hotel Sinton's personnel and the fine cuisine of this modern hostelry are points of note among commercial travelers and tourists.*

*THE HOTEL SINTON offers extensive accommodations. A fine, new 300-room wing is to be completed July 20, 1920.*

**Cincinnati's Leading Hotel**
*700 Rooms, all with Bath or Shower.*

**Management**
**JOHN L. HORGAN**

## BUYING A PIG IN A POKE

The buying of advertising space used to be buying "a pig in a poke." The quantity and quality of circulation was shrouded in mystery and often the bag was tied against investigation.

That day has passed. The advertiser no longer depends on "mere claims." The Audit Bureau of Circulation has untied the strings to the sack and the circulation of the better class of publications is thrown open for the most searching scrutiny.

In buying space in COTTON you are not buying "a pig in a poke." Our A. B. C. statements will stand the analysis of the most exacting investigator.

# BUYERS' INDEX—Continued.

**Laundry Machinery.**
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

**Lavatories.**
Crane Co.
Vogel Co., Jos. A.

**Leather Belting.**
(See Belting).

**Leather Specialties.**
American Supply Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Williams & Sons, I. B.

**Lights—Flood.**
Crouse-Hinds Co.

**Linen Yarns.**
(See Yarns—Linen).

**Link Belting.**
(See Belting—Link).

**Linters.**
(See Waste Dealers).

**Liquid Chlorine.**
(See Chlorine).

**Loaders—Wagon and Truck.**
Link-Belt Company.
Portable Machinery Co.

**Locks and Latches.**
Richards-Wilcox Mfg. Co.

**Lockers—Metal.**
Collins, J. D.
Dowman, George.
Medart Mfg. Co., Fred.

**Logwood Extract.**
(See Dyestuffs and Chemicals).

**Looms.**
Augusta Mill Supply Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Jones Mchry. Corp.
Mason Machine Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield, Wm. & Co.
Slaughter Mchry. Co., G. G.
Stafford Co., The.

**Loom Attachments—Automatic.**
Draper Corporation.

**Loom Harness.**
(See Harness).

**Lubricants.**
Dixon Crucible Co., Jos.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.
Texas Co.

**Lubricators.**
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Sherwood Mfg. Co.

**Lug Straps.**
(See Straps—Lug).

**Lumber.**
Kirkpatrick Lumber & Timber Co.
Southern Cypress Mfg. Asso.
Tuxbury Lumber Co., A. C.

**Lunch Room Equipment.**
(See Restaurant).

**Machine Tools.**
(See Tools).

**Machinists.**
Cresson-Morris Co.

**Marking—Dry Transfer.**
Kaumagraph Co.

**Marking Pots, Stencils, Inks, Etc.**
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.

**Mercerized Yarns.**
(See Yarn Manufacturers).

**Mercerizing Machinery.**
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

**Metal Ceilings, Etc.**
Dowman, George.
Lupton's Sons Co., David.

**Metals—Perforated.**
(See Screens and Sieves).

**Metal Workers—Sheet.**
Dowman, George.
Lombard Iron Works & Supply Co.

**Meters—Flow, Air, Gas, Electric, Steam, Etc.**
Allis-Chalmers Mfg. Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Electric Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co.

**Meters—Revolution.**
Taylor Instrument Co.

**Mill Baskets and Boxes.**
(See Boxes—Mill).

**Mill Engineer.**
(See Architects and Engineers).

**Mill Villages.**
(See Villages).

**Mill Supplies—Miscellaneous.**
(See Supplies—Mill).

**Mill White Paint.**
(See Paint).

**Monorail Conveying Systems.**
Richards-Wilcox Mfg. Co.

**Motors and Generators—Electric.**
Allis-Chalmers Mfg. Co.
Bryan Electric Co.
Carter Electric Co.
Dixie Electrical Equipment Co.
General Electric Co.
Hulme, J. S.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Walraven Co., The.
Westinghouse Elec. & Mfg. Co.

**Moving Picture Mch. & Supplies.**
(See Theatre Equipment).

**Nails—Cement Coated.**
Lovingood Co.
Regnas Co., J. R.

**Nappers.**
Roy & Son Co., B. S.

**Needles—Latch.**
Paulus, Chas. B.

**Oils.**
Hampden Paint & Chem. Co.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Southern Cotton Oil Co.
Wadsworth, Howland & Co., Inc.

**Oils—Finishing.**
(See Finishing and Sizing Materials).

**Oils—Lubricating.**
(See Lubricants).

**Oil Cups.**
(See Lubricators).

**Oil Paper.**
Bradley Mfg. Co., A. J.

**Oil Tanks and Pumps.**
Wayne Oil Tank & Pump Co.

**Oil Testing Instruments.**
Tagliabue Mfg. Co., C. J.

**Oiling Devices.**
(See Lubricators).

**Openers for Cotton, Wool, Waste, Etc.**
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Organs.**
Stieff, Inc., Chas. M.
Schofield Auto Music Co.

**Oxidizing Machinery.**
Cocker Mch. & Fdry. Co.
Rome ch. & Fdry. Co.
Salem Iron Works.
Phila. Drying Machinery Co.

**Oxygen.**
Commercial Acetylene Supply Co.
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Standard Gas Products Co.
Standard Welding & Machine Co.
Waterhouse Welding Co.

**Packing Boxes & Cases—Wooden.**
Hightower Box & Tank Co.
Walke Box Co., Inc.
Wall & Son, C. M.

**Packings.**
Augusta Mill Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jenkins Bros.
Walraven Co.
U. S. Rubber Co.

**Paint.**
Barrett Co., The.
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Gulf States Creosoting Co.
Hampden Paint & Chem. Co.
Johnson Paint Co.
Johnson & Co., Inc., Oliver.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

**Painting Contractors.**
Marshall Co., H. Newton.

**Panel Boards.**
(See Switchboards).

**Paper.**
Bradley Mfg. Co., A. J.
Diamond State Fibre Co.

**Perforated Metal.**
(See Screens and Sieves).

**Peroxides.**
Roessler & Hasslacher Chemical Co.

**Pianos and Players.**
Scofield Auto Music Co.
Stieff, Chas. M.

**Pickers—Curled Hair.**
Schofield Co., Wm.
Smith & Furbush Mach. Co.

**Pickers—Leather.**
Augusta Mill Supply Co.
Garland Mfg. Co.

**Picker Sticks.**
Augusta Mill Supply Co.
Garland Mfg. Co.

**Picking Machinery.**
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Pinions.**
Diamond State Fibre Co.
General Electric Co.

**Pipe and Pipe Fittings.**
Crane Co.
Lunkenheimer Co.
Parks-Cramer Co.
Scaife & Sons Co., Wm. B.
Walraven Co.

**Pipe Organs.**
Scofield Auto Music Co.

**Pipe Threading and Cutting Machines.**
Seeger Machine Tool Co.
Walraven Co., The.

**Playground Apparatus.**
Hill-Standard Co.
Medart Mfg. Co., Fred.

**Pool Tables, Etc.**
Brunswick-Balke-Collender Co.

**Power Transmission.**
Aldrich Mach. Works.
Allis-Chalmers Mfg. Co.
Augusta Mill Supply Co.
Carlyle-Johnson Mch. Co.
Carolina Supply Co.
Cresson-Morris Co.
Chicago Pulley & Shafting Co.
Dodge Sales & Eng. Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Jewell Belting Co.
Jones Mchry. Corp.
Ladew & Co., Inc., Edw. R.
Link-Belt Company.
Morse Chain Co.
Russell Mfg. Co.
S K F Industries.
Seeger Machine Tool Co.
Slaughter Mchry. Co., G. G.
Standard Pressed Steel Co.
Stanley Belting Corp.
U. S. Ball Bearing Co.
U. S. Rubber Co.
Valley Iron Works.
Walraven Co., The.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

**Presses.**
American Laundry Mchry. Co.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Galland-Henning Mfg. Co.
Lovingood Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Seeger Machine Tool Co.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The.

**Pulleys.**
Augusta Mill Supply Co.
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Diamond State Fibre Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Seeger Machine Tool Co.
Valley Iron Works.
Walraven Co., The.

**Pulley Covering.**
Goodyear Tire & Rubber Co.
Williams & Sons, I. B.

**Pumps.**
Allis-Chalmers Mfg. Co.
Hughes Specialty Well Drilling Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Textile Finishing Machinery Co.
Toomey, Frank.
Walraven Co.
Walsh & Weidner Boiler Co., The.
Westinghouse Elec. & Mfg. Co.

**Pump Valves.**
(See Valve Discs).

**Psychrometers—Sling.**
Taylor Instrument Co.

**Pyrometers.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Quill Cleaning Machines.**
Terrell Machine Co.
Dufur & Co.

**Railroads.**
A. & W. P. Ry.
Seaboard Air Line Ry.

**Receptacles—Fibre.**
(See Fibre Products).

**Recording Instruments.**
General Electric Co.
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Recorders—Draft.**
Tagliabue Mfg. Co., C. J.

**Recorders—Pressure.**
Tagliabue Mfg. Co., C. J.

**Recorders—Temperature.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Reeds.**
American Supply Co.
Emmons Loom Harness Co.

**Reels.**
Cocker Mch. & Fdry. Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield Co., Wm.
Whitin Machine Works.

**Reflectors—Lamp.**
(See Lamp Reflectors).

**Regulators—Condensate.**
Tagliabue Mfg. Co., C. J.

**Regulators—Liquid Level.**
General Electric Co.
Tagliabue Mfg. Co., C. J.

**Refrigerating Machines.**
Southern States Supply Co.

**Regulators—Pressure.**
General Electric Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Regulators—Temperature.**
(See Temperature Controllers).

**Regulators—Time.**
Tagliabue Mfg. Co., C. J.

**Reinforcing Slag.**
Birmingham Slag Co.

**Reinforcement Bars for Concrete.**
Corrugated Bar Co.

**Repairing—Electrical.**
Jones Mchry. Corp.
Westinghouse Elec. & Mfg. Co.

**Repairing—Textile Machinery, Etc.**
Chattanooga Brazing & Welding Co.
General Machine Works.
Southern Spindle & Flyer Co.
Standard Gas Products Co.

**Restaurant Equipment.**
Chattanooga Queensware Co.
Reischmann Co.
Pick & Co., Albert.
Sani Products Co.
Wright Co.

**Rib Top Cutters.**
General Machine Works.
Wildman Mfg. Co.

**Ring Travelers—Steel and Bronze.**
Whitinsville Spinning Ring Co.
Whitin Machine Works.

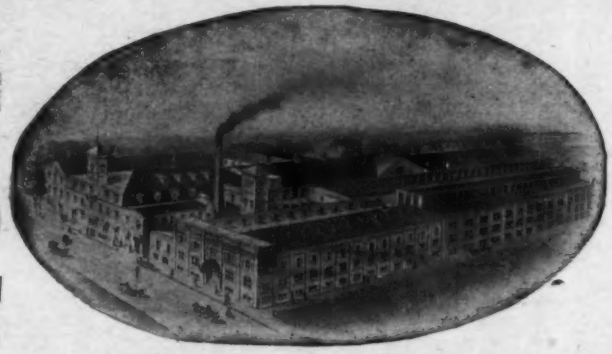
**Rings—Spinning.**
(See Spinning Rings).

**Rivets—Belt.**
Crescent Belt Fastener Co.

**Rocker Shaft Bearings.**
(See Bearings).

**Rolls—Calender.**
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Roy & Son Co., B. S.
Textile Finishing Machinery Co.

**Rolls—Rubber Covered.**
American Wringer Co.
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son Co., B. F.
Textile Finishing Machinery Co.



## Emmons Loom Harness Co.

The Largest Manufacturers of Loom Harness and Reeds in America.

### Loom Harness and Reeds

COTTON HARNESS for all kinds of plain and Fancy Weaves in Cotton and Silk Goods.

MAIL HARNESS for Cotton Duck, Worsted, Silk and Woolen Goods.

SELVEDGE HARNESS, any depth up to 25 inches, for Weaving Tape Selvedges.

REEDS for Cotton, Woolens, Silk and Duck.

Slasher and Striking Combs, Warper and Leice Reeds, Beamer and Dresser Hecks, Mending Eyes, Jacquard Heddles.

**LAWRENCE, - - - - - MASS.**

## SUPERIOR TURKEY RED OILS

NOPCOCASTOR is a Turkey Red Oil of maximum sulphonation and is guaranteed to be always 100% up to a specified strength.

NOPCOCASTOR goes further per dollar spent than any other oil.

*Send for working samples and technical data.*

**National Oil Products Company**

Harrison, N. J. Chicago

## Spiker & Lose

### ENGINEERS

Reports, estimates, appraisals, plans, supervision and consultation on all classes of reinforced concrete, steel and timber structures. Specialty — mills, warehouses, industrial and hydro-electric developments.

**519-20 Forsyth Bldg., Atlanta, Ga.**

## The American Audit Co.

F. W. LAFRENTZ, C. P. A., Pres. Telephone Ivy 869
H. M. RICE, C. P. A., Vice-Pres. Cable Address
A. P. LAFRENTZ, Secy. & Treas. Amdit, New York

NEW YORK—100 Broadway (Home Office).
33rd St. and 5th Ave., Waldorf-Astoria.
ATLANTA BRANCH—1013-1017 4th National Bank Bldg.
CHICAGO—Marquette Building.
BOSTON—P. O. Square Bldg.
PHILADELPHIA—Bellevue Court Bldg.
BALTIMORE—Garrett Bldg.
WASHINGTON, D. C.—Colorado Building.
NEW ORLEANS—Maison Blanche.
RICHMOND, VA.—American National Bank Building.
LONDON, E. C.—50 Gresham St., Bank.
MILWAUKEE—Loan & Trust Bldg.
SCRANTON—County Bank Bldg.

Specialists in Cost Systems and Manufacturing Accounts.

**C. B. BIDWELL, P. A., Resident Vice-President**

Shafts, Pulleys, Hangers, Belting Packing Lacing,

## BOILERS

For Mills and Public Works. Low Prices

Tanks, Stacks, Smoke Flues, Boiler Tubes, Pipe, Valves, Fittings, Kerosene and Gasoline Engines, Wood Saws, Pumps, Heaters, Injectors, Engine Supplies and Repairs for Mills, Hotels, Public Works.

Iron and Brass Castings Cast Every Day.

**LOMBARD** Foundry, Machine, Boiler Works, and Supply Store
**AUGUSTA, GEORGIA.**

## PERFORATED METALS

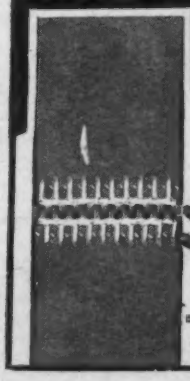
of Aluminum, Brass, Copper, Steel, Tin, Zinc and other Sheet Metals and materials for Cotton Seed Oil Mills, Cotton Gins, Phosphate Screens, Coal Screens, Ventilators, Electrical Devices, Sugar Mills, Surfacing for Sand Rolls, Threshing Machines, Fanning Mills, Pulp Machinery, Grilles (Register Faces) all Mining Screens and

FOR EVERY PURPOSE

The Best screens possible. We make everything in perforated metals. All orders handled rush.
Send for Metal Sample Plate Circular.

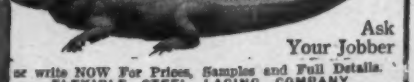
ERDLE PERFORATING CO.
163 York St. Rochester, N. Y.

## The World's Greatest Belt Lacing



Simple, Strong, Economical
Preferred by All Who Know It

"Never Lets Go" ALLIGATOR STEEL BELT LACING
TRADE MARK REG. U.S. PAT. OFFICE
Nothing Needed But a Hammer



Ask Your Jobber

or write NOW For Prices, Samples and Full Details.
FLEXIBLE STEEL LACING COMPANY
4619 Lexington St., Chicago, Ill., U. S. A.
135 Finsbury Pavement, London, E. C. England

# BUYERS' INDEX—Continued.

**Rolls—Steel.**
Butterworth & Sons Co., H. W.
Campbell Mfg. Co.
Perkins & Son, B. F.
Southern Spindle & Flyer Co.
Textile Finishing Machinery Co.

**Rolls—Top.**
Campbell Mfg. Co.

**Roofing.**
Barrett Co., The.
Cooledge & Sons, F. J.
Cartright Metal Roofing Co.
Dowman, George.
Johnson Paint Co.
Kirkpatrick Lum. & Timber Co.
Peaslee-Gaulbert Co., Inc.
Wadsworth, Howland & Co.
Walraven Co.

**Roof and Cement Coating.**
Barrett Co.
Cooledge & Sons Co., F. J.
Du Pont de Nemours & Co., E. I.
Hampden Paint & Chem. Co.
Johnson & Co. Inc., Oliver.
Johnson Paint Co.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co.

**Rope—Transmission.**
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Walraven Co.

**Roving Cans and Trucks.**
(See Cans—Roving).

**Roving Machinery.**
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

**Rubber Stamps.**
(See Stamps, Stencils, Etc).

**Rubber Goods.**
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

**Sanitary Products.**
Chattanooga Queensware Co.
Crane Co.
Dail Steel Products Co.
Hackney Bros. Co.
Rundle-Spence Mfg. Co.
Sanitas Co.
Sani Products Co.
United Electric Co.
Vogel Co., Jos. A.

**Sash Window—Steel.**
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David.

**Scales.**
American Kron Scale Co.
Lovingood Co.
Torsion Balance Co.

**Scale Preventer—Boiler.**
(See Boiler Feed Water Purification).

**Screens and Sieves—Perforated.**
Erdle Perforating Co.
Link-Belt Company.

**Scrubbing Machine—Floor.**
American Scrubbing Mch. Co.

**Second Hand Machinery and Supplies.**
Jones Mchry. Corp.
Toomey, Frank, Inc.
Walraven Co.

**Sewing Machines.**
Merrow Machine Co., The.
Textile Finishing Machinery Co.
Willcox & Gibbs Sewing Machine Co.

**Shades—Electric Lamp.**
(See Reflectors).

**Shafting and Hangers.**
Augusta Mill Supply Co.
Chicago Pulley & Shafting Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.,
Link-Belt Co.
Seeger Machine Tool Co.
S K F Industries.
Standard Pressed Steel Co.
Valley Iron Works.
Walraven Co., The.

**Shears.**
Roy & Sons Co., B. S.

**Shelving—Sectional Steel.**
Collins, J. D.
Dowman, George.
Hyatt Roller Bearing Co.
Lupton's Sons Co., David.
Medart Mfg. Co., Fred.

**Shingles—Asphalt.**
Barrett Co.

**Shingles—Metal.**
Cortright Metal Roofing Co.
Dowman, George.

**Shingles—Wood.**
Kirkpatrick Lum. & Timber Co.
Southern Cypress Mfg. Asso.

**Shipping Room Machinery and Supplies.**
Acme Steel Goods Co.
American Kron Scale Co.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Collins, J. D.
Diamond State Fibre Co.
Elwell-Parker Electric Co.
Handy Equip. Corp.
Hightower Box & Tank Co.
Hulme, J. S.
Keystone Fibre Co.
Lane & Bro., W. T.
Lovingood Co.
McKinney Mfg. Co.
Regnas & Co., J. R.
Rogers Fibre Co.
Standard Fibre Co.
Seeger Machine Tool Co.
Signode System, Inc.
Torsion Balance Co.
Walraven Co., The.
Walke Box Co., Inc.
Wall & Son, C. M.

**Shower Baths and Cabinets.**
Crane Co.
Shower Bath Cabinet Co.

**Shuttles.**
Crompton & Knowles Loom Wks.
Draper Corporation.
Shambow Shuttle Co.

**Sinkers.**
Paulus, Chas. B.

**Singeing Machinery.**
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Mach'nery Co., The.

**Size Box Temperature Controller.**
Powers Regulator Co.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

**Size Kettles.**
Butterworth & Sons Co., H. W.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

**Sizing and Finishing Compounds.**
(See Finishing and Sizing Materials).

**Skewers.**
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.

**Skylights—Steel.**
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David.

**Slag for Concrete.**
Birmingham Slag Co.

**Slashers and Slasher Room Supplies.**
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Lovingood Co.
Mossberg Co., Frank.
Regnas & Co., J. R.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

**Slasher Tape.**
(See Tape—Slasher).

**Slate Asphalt Roofing.**
Barrett Co.

**Sliding Partition Hardware.**
Richards-Wilcox Mfg. Co.

**Slubbers.**
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

**Soap—Textile.**
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arnold, Hoffman Co.
Borne, Scrymser Co.
Dobbins Soap Mfg. Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Hemingway & Co., Frank.
Klipstein & Co., A.
Newport Chemical Works.
Pick & Co., Albert.
United Chemical Products Corp.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques.

**Soda Ash.**
Klipstein & Co., A.

**Softeners—Cotton.**
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Borne, Schrymser Co.
Bosson & Lane.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Grasselli Chemical Co.
Hemingway & Co., Frank.
Kali Mfg. Co.
Klipstein & Co., A.
Moore Oil Refining Co.
Newport Chemical Works.
National Oil Products Co.
Pick & Co., Albert.
Roessler & Hasslacher Chemical Co.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Wolf & Co., Jacques.
Zavon Co., Inc.

**Softeners—Water.**
(See Water Softeners).

**Solderless Connectors—Frankel.**
Westinghouse Elec. & Mfg. Co.

**Solvents.**
(See Finishing).

**Sorting Table Tops.**
Pick & Co., Albert.
Reischmann Co.
Sani Products Co.

**Spindles.**
Allen Spindle Corp.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

**Spindles—Ball Bearing.**
Allen Spindle Corp.

**Spinners.**
Arkray Mills, Inc.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Fletcher Works.
Florsheim, H. A.
Gray Mfg. Co.
Hunter Mfg. & Commn. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

**Spinning Frames.**
American Machine Co., H. & B.
Crompton & Knowles Loom Wks.
Howard & Bullough.
Schaum & Uhlinger.
Saco-Lowell Shops.
Whitin Machine Works.

**Spinning Rings.**
Draper Corporation.
Howard & Bullough.
Greenville Spool & Mfg. Co.
Gre'st Mfg. Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

**Spinning Tape Specialists.**
American Textile Banding Co., Inc.
Barber Mfg. Co.
Campbell Mfg. Co.
Knit Goods Specialty Co.

**Spooling Machinery.**
Draper Corporation.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Spools and Skewers.**
Greenville Spool & Mfg. Co.

**Sprinkler Tanks.**
(See Tanks, Towers, Etc.).

**Sprockets.**
Link-Belt Company.
Morse Chain Co.
Valley Iron Works.

**Stamping—Die Transfer System.**
Kaumagraph Co.

**Stamps, Stencils and Stencil Machines.**
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.
Southern Stamp & Stencil Co.

**Stand Pipes.**
(See Tanks, Towers, Etc.).

**Starch and Gums.**
(See Finishing and Sizing Materials).

**Steam Engines.**
(See Engines—Steam).

**Steam Hose.**
(Ste Hose—Steam).

**Steam Pumps.**
(See Pumps—Steam).

**Steam Traps.**
(See Traps—Steam).

**Steel Buildings.**
Dowman, George.

**Steel Doors, Window, Partition, Etc.).**
Detroit Steel Products Co.
Dowman, George.
Lupton's Sons Co., David.

**Steel Lockers.**
Medart Mfg. Co., Fred.

**Stencils and Stencil Papers.**
(See Stamps and Stencils).

**Stencil Brushes.**
(See Marking Pots and Brushes).

**Stencil Cutting Machines.**
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.
Lovingood Co.
Regnas & Co., J. R.
Southern Stamp & Stencil Wks.

**Stop Motion.**
Crompton & Knowles Loom Wks.
Draper Corporation.
Wildman Mfg. Co.

**Stokers.**
Cokal Stoker Co.
Westinghouse Elec. & Mfg. Co.

**Storage Batteries.**
Edison Storage Battery Co.

**Storage Racks.**
(See Shelving).

**Straps—Lug.**
Augusta Mill Supply Co.
Garland Mfg. Co.

**Strapping.**
(See Leather Specialties or Band Strapping).

**Street Lighting Fixtures.**
Cutter Works, George.

**Supplies—General Mill.**
Augusta Mill Supply Co.
Hulme, J. S.
Jones Mchry. Corp.
Regnas & Co., J. R.
Seeger Machine Tool Co.
Slaughter Machinery Co., G. G.
Steel Heddle Mfg. Co.
Walraven Co., The.

**Switches—Knife-Elec.**
Crouse-Hinds Co.
Cutter Co., George.
General Electric Co.

**Switchboards—Panel.**
Crouse-Hinds Co.
Cutter Co., George.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

**Tables, Chairs, Etc.**
Hill-Standard Co.
Medart Mfg. Co., Fred.
Pick & Co., Albert.
Reischmann Co.
Sani Products Co.
Wright Co.

**Tachometers.**
Tagliabue Mfg. Co.
Veeder Mfg. Co.

**Tag Addressing Machines.**
Regnas & Co., J. R.

**Tallow.**
(See Finishing Materials).

**Tanks and Tubs.**
Hightower Box & Tank Co.
Lombard Iron Works & Supply Co.
Permutit Co.
Phila. Drying Machinery Co.

## 90 Per Cent Were BARBER Spinning Tapes

More than 90% of new tape drive cotton frames put out in the past five years have been started with BARBER Spinning Tapes.

Textile Machinery Engineers always specify Barber Spinning Tapes throughout the United States as well as throughout the world. We are the largest exporters in the country of spindle tapes, our product going to Canada, Mexico, Colombia, Peru, Argentine, Spain, China, Japan, etc. To us they came seeking quality and they found it. To us they came seeking service during the tense times of war and we did not fail them.

BARBER Spinning Tapes are truly QUALITY in every sense—materials, workmanship and service.

We carry an extensive stock of spinning and twisting tapes of all kinds, and a wire to us at our expense will bring you service that is swift and sure.

*Wire us today or write for details.*

**BARBER MANUFACTURING COMPANY**

*Spinning Tape Specialists.*

**LOWELL, MASS.**

ALL STEEL ECONOMY FIRE PROOF BALING PRESSES

ALL SIZES FOR ALL PURPOSES

*LARGEST LINE BUILT IN U.S.A.*

ECONOMY BALER CO., DEPT C ANN ARBOR, MICH., U.S.A.

THE SCOOP CONVEYOR

THOUSANDS IN USE

FOR STORING AND RECLAIMING
LOADING AND UNLOADING
CARS, TRUCKS AND WAGONS

SAVES 6 TO 12 MEN
SAVES CAR DEMURRAGE

ELIMANATES SHOVEL AND WHEELBARROW WORK
KEEPS EQUIPMENT MOVING

*WRITE FOR CATALOGUE*

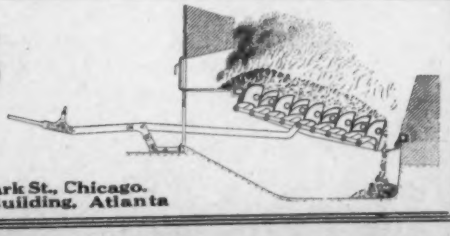
PORTABLE MACHINERY CO., PASSAIC N.J.

KIRKPATRICK
LUMBER & TIMBER CO.
BIRMINGHAM, ALA.
WHOLESALE YELLOW PINE

Flooring, Ceiling, Siding, Timbers, Car Materials, Crating, Sheathing, Roofers, Lath

WE SOLICIT YOUR INQUIRIES AND ORDERS

COKAL HAND STOKERS



Hundreds of satisfied users report saving of fuel and increased boiler capacity.

*Write for Catalog.*

COKAL STOKER CORPORATION 1017 N. Clark St., Chicago. 517 Hurt Building, Atlanta

# BUYERS' INDEX—Continued.

Textile Finishing Machinery Co., The.
Walsh & Weidner Boiler Co.

**Tapes and Braids.**
American Textile Banding Co., Inc.
Barber Mfg. Co.
Knit Goods Specialty Co.
Weimar Brothers.

**Tape Looms—Cotton.**
Fletcher Works.
Schaum & Uhlinger.

**Tape—Slasher.**
Lovingood Co.
Regnas & Co., J. R.

**Tapes—Spinning and Twisting.**
Barber Mfg. Co.
Knit Goods Specialty Co.

**Tape Making Machines.**
(See Bandage and Tape Mach.)

**Telephones—Calling System.**
Carter Electric Co.
Dixie Elec. Equip. Co.

**Temperature Controllers.**
Carrier Eng. Corp.
General Electric Co.
Parks-Cramer Co.
Powers Regulator Co.
Sturtevant Co., B. F.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Temples.**
Draper Corporation.

**Tenters.**
Butterworth & Sons Co., The.
Textile Finishing Mach. Co.

**Textile Machinery.**
(See Cotton Mill Machinery).

**Theatre Equipment.**
Lucas Theatre Supply Co.
Southern Theatre Equip. Co.

**Thermometers—All Kinds.**
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

**Thin Place Preventers.**
Draper Corporation.

**Thread Guides.**
Mitchell-Bissell Co.
Palmer Co., The I. E.

**Tiering Machines.**
Collins, J. D.
General Utilities Co.
Lovingood Co.
Regnas & Co., J. R.

**Ties—Baling.**
(See Bale Ties).

**Tires—Auto and Truck.**
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

**Toilets.**
Crane Co.
Dail Steel Products Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos. A.

**Tools—All Kinds.**
Jones Mchry. Corp.
National Machine Tool Co.
Seeger Machine Tool Co.
Walraven Co., The.

**Towers.**
(See Tanks and Towers).

**Tractors—Electric, Industrial.**
Collins, J. D.
Elwell-Parker Elec. Co.
Regnas & Co., J. R.

**Transmission—Power.**
(See Power Transmission Machinery).

**Transfer Points.**
Adams Co., Geo. H.

**Traps—Return Steam.**
American Blower Co.
Morehead Mfg. Co.

**Trucks—Auto.**
Packard Motor Car Co.
Triangle Motor Truck Co.
White Co., The.
White Hickory Motor Corp.

**Trucks, Baskets, Etc., Canvas.**
Lane & Bro., W. T.

**Trucks—Electric—Inter.**
Collins, J. D.
Elwell-Parker Electric Co.
Regnas & Co., J. R.

**Trucks—Hand and Elevating.**
Collins, J. D.
Elwell-Parker Elec. Co.
Handy Equip. Corp.
Hulme, J. S.
Lovingood Co.
McKinney Mfg. Co.
Regnas & Co., J. R.

**Trucks—One Man.**
Handy Equip. Corp.
McKinney Mfg. Co.

**Trucks—Fibre—Inter, Etc.**
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

**Tubes—Cloth.**
Diamond State Fibre Co.

**Turbines—Steam.**
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

**Twisting Machinery and Supplies.**
Barber Mfg. Co.
Draper Corporation.
Howard & Bullough.
Knit Goods Specialty Co.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

**Urinals.**
Crane Co.
Dail Steel Products Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos. A.

**Unions—Bronze.**
Crane Co.
Jenkins Bros.
Lunkenheimer Co.

**Vacuum Cleaning System for Mills.**
United Electric Co.

**Vacuum Pans.**
Cresson-Morris Co.

**Valves—Angle, Globe, Cross, Blow-off, Check, Gate, Pop-Safety, etc.).**
Crane Co.
Jenkins Bros.
Lunkenheimer Co.

**Valves—Non-return Stop.**
Crane Co.
Jenkins Bros.
Lunkenheimer Co.

**Valve Discs.**
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jenkins Bros.

**Varnishes.**
Barrett Co.
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Hampden Paint & Chem. Co.
Johnson & Co., Inc., Oliver.
Johnson Paint Co.
Patterson-Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

**Ventilating Apparatus.**
American Blower Co.
Carlisle & Gale Co.
Carrier Eng. Corp.
General Electric Co.
Parks-Cramer Co.
Perkins & Son, Inc., B. F.
Sargent's Sons Co., C. G.
Sturtevant Co., B. F.
Tolhurst Machine Co.

**Vises and Benches.**
Richards-Wilcox Mfg. Co.

**Village Architects and Designers**
Draper, E. S.
Lockwood, Green & Co.
Sirrine, J. E.
Spiker & Lose.
Tuxbury Lumber Co., A. C.

**Village Houses.**
(See Houses—Ready-Built).

**Wagon and Car Unloaders.**
Portable Machinery Co.

**Warehouse—Portable.**
(See Buildings).

**Warehouse—Storage.**
Burg Line Agency.

**Warehouse Door Hardware.**
(See Doors and Hardware).

**Warp Drawing Machine.**
Cocker Machine & Fdry. Co.
Crompton & Knowles Loom Wks.

**Warpers and Warping Machinery.**
Cocker Mch. & Fdry. Co.
Draper Corporation.
Howard & Bullough.
Mossberg Co., Frank.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

**Washers—Cloth.**
American Laundry Machinery Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Fdry. Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Mchry. Co.

**Washers.**
Diamond State Fibre Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

**Waste Dealers.**
Valley Waste Mills.

**Waste Balers.**
(See Baling Presses).

**Waste Machinery—Cotton.**
Howard & Bullough.
Saco-Lowell Shops.
Sargent's Sons Corp., C. G.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Co.

**Watchman Clocks.**
(See Clocks—Watchman).

**Water Coolers—Fountain).**
Central Brass Mfg. Co.
Crane Co.
Rundle-Spence Mfg. Co.
Southern States Supply Co.

**Water Columns.**
Lunkenheimer Co.

**Water Softeners.**
American Water Softener Co.
Borromite Co. of America.
Hulme, J. S.
Permutit Co.
Refinite Co.
Scaife & Sons Co., Wm. B.

**Water Towers.**
(See Tanks and Towers).

**Waterproofing Machinery.**
Butterworth & Sons Co., H. W.
Textile Finishing Machinery Co., The.

**Weaving.**
(See Yarn Manufacturers).

**Welding Apparatus—Electric Arc.**
General Electric Co.
Westinghouse Elec. & Mfg. Co.

**Welding Apparatus and Supplies—Oxy-Acetylene.**
Commercial Acetylene Supply Co.
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Southern Welding Co.
Standard Gas Products Co.
Waterhouse Welding Co.

**Welding—Job.**
Chattanooga Brazing & Welding Co.
Southern Welding & Mach. Co.
Standard Gas Products Co.
Waterhouse Welding Co.

**Welfare Architects.**
(See Village Architects).

**Welfare Equipment.**
Chattanooga Queensware Co.
Crane Co.
Cutter Works, George.
Hill Standard Co.
Lucas Theatre Supply Co.
Medart Mfg. Co., Fred.
Pick & Co., Albert.
Reischmann Co.
Sanitas Co.
Sani Products Co.
Scofield Auto Music Co.
Southern Theatre Equip. Co.
Stieff, Inc., Chas. M.
Thomas Co., F. H.
Wright Co.

**Well Drilling.**
Hughes Specialty Well Drilling Co.
Robbins, J. E.

**Wheels—Fibre.**
(See Fibre Products).

**Wheel Puller.**
General Electric Co.
Greb Co., Inc.

**Whistles—Steam.**
Crane Co.
Lunkenheimer Co.

**Winders.**
Firsching, J. A.
Howard & Bullough, American Machine Co.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Stafford Co., The.
Universal Winding Co.

**Windows—Steel.**
Detroit Steel Products Co.
Dowman, George.
Hydraulic Steelcraft Co.
Lupton's Sons Co., David.

**Wires—Drop.**
(See Drop Wires).

**Wiring—Elecrical.**
(See Electrical Contractors).

**Wood.**
(See Lumber).

**Wood Preserver.**
Barrett Co.
Du Pont de Nemours & Co., E. I.
Gulf States Creosoting Co.
Johnson & Co., Inc., Oliver.
Johnson Paint Co.
Patterson Sargent Co.
Peaslee-Gaulbert Co., Inc.
Southern Cotton Oil Co.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

**Wood Pulleys.**
(See Pulleys).

**Woodworkers' Benches and Vises.**
Richards-Wilcox Mfg. Co.

**Woolen Machinery.**
Butterworth & Sons Co., H. W.
Crompton & Knowles Loom Wks.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Smith & Furbush Mach. Co.
Stafford Co., The.
Textile Finishing Machinery Co.
Whitin Machine Works.

**Wrenches.**
Lane Unique Tool Co., Wm. B.

**Wringers—Power.**
American Wringer Co.

**Yarn Manufacturers.**
American Processing Co.
Arkray Mills, Inc.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Florsheim, H. A.
Gray Mfg. Co.
Hunter Mfg. & Comm. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

**Yarn Dealers & Comm. Merchants.**
(See Cotton Yarn and Cloth Commission Merchants and Dealers).

**Yarn Dyers.**
(See Dyers).

**Yarn Testers.**
Scott & Co., Henry L.

UNIVERSAL WINDING COMPANY
TEXTILE WINDING MACHINES
FEESONA

An Atlanta Office
in charge of
Winthrop S. Warren
has been opened at
1121 Candler Building

Frederick Jackson,
SOUTHERN AGENT,
Box 523, Charlotte, N. C.

BOSTON, U.S.A.
PROVIDENCE, R.I. NEW YORK CHARLOTTE, N.C.
PARIS MANCHESTER BOMBAY

COAL

HIGH GRADE
KENTUCKY, TENNESSEE AND ALABAMA
STEAM, GAS,
DOMESTIC, SMITHING
FURNACE AND FOUNDRY COKE
UNITED STATES FUEL CORPORATION
CHATTANOOGA, TENN.

*Schofield Patent Automatic Opener and Duster*

For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.

"Schofield" intermediate feeds for Cards, Wool, Rag, Waste, Hair and Lumper Pickers, Automatic, Cone and Oldham Willows, Rag and Extract Dusters, Waste Pullers, Blamaine Lap Feeds, Curled Hair Pickers, Needle Looms, etc.

*WILLIAM SCHOFIELD COMPANY*
Iron Founders, Textile Machinery Builders.
*Krams Ave., Manayunk, Philadelphia, Pa.*

BETTER PAINT

There are three reasons why you should paint your Cotton Mill with Johnson's Paint:

1. Conditions of climate, character of surface to be painted, and other important factors to be considered renders it impossible for the best results without the skill and experience of a practical painter and the more technical knowledge of the manufacturer.
2. As manufacturers we have arrived, after careful investigation and exhaustive tests, at one conclusion that the best is none too good, and to this end, through the selection of the best raw materials we can find, pure oil and lead, and with certain colors, thoroughly mixed by means of modern machinery, have produced a quality of paint that will answer every requirement for all general purposes and special work.
3. Our facilities enable us to supply you with paint of the best quality. Our fully equipped laboratory is always at your disposal for permanent and efficient service.

We standardize on our regular high grades, consisting of Mill White, Flat and Gloss, Ready Mixed House Paints, Varnishes, Cottage Paints, Barn Paints, Stains and Roof Paints.

JOHNSON PAINT COMPANY
P. O. South Atlanta, Georgia

B Y C
TRADE MARK

BARBER-COLMAN COMPANY

Main Office and Factory
Rockford, Ill.
Boston, Mass. Greenville, S. C.

WARP TYING MACHINES
WARP DRAWING MACHINES
HAND KNOTTERS FOR SPOOLING AND WINDING

STENCILS FOR COTTON SHIPPERS, COTTON MILLS, MERCHANTS & MANUFACTURERS - ALSO BRUSHES, INK, MARKING POTS.
RUBBER STAMPS. NOTARIAL CORPORATION SEALS
ATLANTA RUBBER STAMP & STENCIL WORKS
OFFICE 33 LUCKIE ST. WORKS 350 EDGEWOOD AVE.
P.O. BOX 834 OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA, GA.

WAREHOUSE COMPANY "MAASVEEM"
Incorporated
Offices 5-7 Calandstraat
ROTTERDAM, HOLLAND
Warehouses for Cotton
Modern Equipment
Advances on our warehouse certificates are obtainable.
Bankers:—Rotterdamsche Bankvereeniging
At Rotterdam, Amsterdam and
The Hague
For Particulars Apply to
BURG LINE AGENCY
SAVANNAH, GA.

ADVERTISING is an economy and cuts the cost of selling, making lower prices or better goods possible without sacrifice of the sellers' profits.

# Advertisers' Index


Aberthaw Construction Co. ... 48
Acme Steel Goods Co. .....261
Aldrich Machine Works .....266
Allis-Chalmers Mfg. Co. .....273
Althouse Chemical Co. .....244
American Audit Co. .....291
American Blower Co. ..... 40
American Cast Iron Pipe Co. ..275
American City Engineering Co.130
American Kron Scale Co. ....261
American Laundry Mchry. Co...234
American Machine Co., H. & B.105
American Processing Co. .....249
American Scrubbing Equipment Co. ..... 24
American Supply Co. .....254
American Textile Banding Co., Inc. .....150
American Water Softener Co...239
American Wringer Co. .....250
Anchor Post Iron Works ....122
Aniline Dye & Chemicals, Inc..246
Arabol Mfg. Co. .....297
Arkray Mills, Inc. .....276
Arlington Cotton Mills .....276
Arnold, Hoffman & Co. .....248
Arrow Mills, Inc. .....276
Asphalt Roofing Products Co...
Atlanta Brush Co. ..... 60
Atlanta National Bank .....279
Atlanta & West Point Ry. ...281
Atlantic Dyestuff Co. .....246
Atlanta Rubber Stamp & Stencil Works .....295
Atlas Electric Devices Co. ...240
Augusta Mill Supply Co. .....140

Barber-Colman Co. .....295
Barber Mfg. Co. .....293
Barrett Co., The .....103
Beer, H. & B. .....278
Benjamin Electric Co. ..... 54
Birmingham Slag Co. ..... *
Borne, Scrymser Co. .....242
Borromite Co. of America ....239
Bosson & Lane .....248
Bradley Mfg. Co., A. J. .....148
Brinton Co., H. .....144
Brunswick-Balke-Collender Co. 23
Bryan Electric Co. .....274
Burg Line Agency .....295
Butterworth & Sons Co., H. W.237

Campbell Mfg. Co. .....285
Carlisle & Gale Co. .....265
Carlyle-Johnson Machine Co. ..266
Carrier Engineering Corp. .....289
Carter Electric Co. .....274
Carver-Beaver Yarn Co. .....148
Central Brass Mfg. Co. .....
Chattanooga Brazing & Welding Co. .....267
Chattanooga Queensware Co. ..256
Chicago Pulley & Shafting Co.. 39
Chicago Watchman's Clocks Works .....130
Citizens & Southern Bank ....277
Classified Opportunities .....283
Cocker Machine & Foundry Co.238
Cokal Stoker Co. .....293
Collins, J. D. .....256
Commercial Acetylene Supply Co. .....128
Cooledge & Sons, F. J. .....264
Corn Products Refining Co. ....247
Corrugated Bar Co., Inc. .....233
Cortright Metal Roofing Co. ..233
Crane Co. ..... 41
Crescent Belt Fastener Co. ...267
Cresson-Morris Co. .....266
Crompton & Knowles Loom Works ..... 20
Crouse-Hinds Co. ..... 55
Cutter Works, George ..... 53
Cutts Co., E. A. .....275
Cyclone Fence Co. .....299

Dail Steel Products Co. ..... *
Davis, Roger W. ..... 18
Detroit Steel Products Co. ... 51
Diamond States Fibre Co. ....255
Dixie Electric Equipment Co...273
Dixon Crucible Co., Joseph ... 62
Dobbins Soap Mfg. Co. .....150
Dodge Sales & Eng'g Co. .... *
Dow Chemical Co. ..... 57
Dowman, George .....298
Draper Corporation ..... 3
Draper, E. S. .....148
Dufur & Co. .....275
Du Pont de Nemours & Co., E. I. .....241

Eco Clock Co. .....256
Economy Baler Co. .....293
Economy Fuse & Mfg. Co. ....272
Edison Storage Battery Co. ... *
Electric Smelting & Aluminum Co. .....146
Electro Bleaching Gas Co. ....233
Elwell-Parker Electric Co. ... *
Emmons Loom Harness Co. ...291
Erdle Perforating Co. .....291
Ernst & Ernst .....114

Fawcett, Hughes .....278
Ferguson Co., John W. ..... 49
Firsching Co., J. A. .....146
Flexible Steel Lacing Co. ....291
Fletcher Works ..... 10
Flint Mfg. Co. .....276
Florsheim, H. A. .....276
Fonda Organization, The E. A... 13

Gallard-Henning Mfg. Co. ....261
Garland Mfg. Co. ..... 62
General Electric Co. ..... 59
General Machine Works .....146
Goode, R. L. .....275
Goodyear Tire & Rubber Co... *
Grasselli Chemical Co. .....242
Graton & Knight Mfg. Co. .... 29
Gray Mfg. Co. .....276
Greb Co. .....289
Gregory & Gregory, Walter ...150
Greenville Spool Mfg. Co. ...260
Greist Mfg. Co. ..... 7
Gude & Co. .....275
Gulf States Creosoting Co. ...262

Hackney Bros. .....275
Hampden Paint & Chem. Co. ..264
Handy Equipment Co. ..... 28
Hemphill Mfg. Co. .....140
Hightower Box & Tank Co. ...260
Hill Standard Co. ..... 22
Hotel Sinton .....289
Howard & Bullough Mach. Co...105
Hughes Specialty Well Drilling Co. ..... 275
Hulme, J. S. ..... 62
Hunter Mfg. & Comm. Co. .... *
Huntington & Guerry Inc..... 56
Hyatt Roller Bearing Co. ..... 4, 5, 8 & 9

International Eng'g Works ...271
Irving National Bank .....117
Iselin & Co., Wm. .....148
Ivanhoe-Regent Works ..... 58

Jenkins Bros. .....268
Jewell Belting Co. .....267
Jones Machinery Corp. .....298
Johnson Paint Co., .....295
Johnson & Co., Inc., Oliver ... 52
Jordan Mfg. Co. ..... 62

Kali Mfg. Co. .....248
Kaumagraph Co. ..... 62
Keever Starch Co. .....244
Keystone Fibre Co. .....252
King, Jr., Habersham .....148
Kirkpatrick Lumber & Timber Co. .....293
Klipstein & Co., A. .....249
Knit Goods Specialty Co. ....254

Ladew Co., Edw. R. ..... 31
Lane & Bro., W. T. ..... 16
Lane Unique Tool Co., Will B. 60
Lewis, John D. .....148
Linde Air Product Co. ..... *
Link-Belt Co. ..... 32
Lockwood, Greene & Co. .....265
Lombard Iron Works .....291
Lovingood Co., The ..... *
Lowell Crayon Co. .....233
Lunkenheimer Co. ..... 15
Lucas Theatre Supply Co. .... 17
Lupton's Sons Co., David ... 45

Marshall Co., H. Newton .....265
Mason Machine Works ..... 20
McKinney Mfg. Co. ..... 26
Medart Mfg. Co., Fred .....257
Merrow Machine Co. .....144
Metz Co., H. A. .....243
Millers Indemnity Underwriters .....120
Mitchell-Bissell Co. ..... 2
Moore Oil & Refining Co. .... *
Morehead Mfg. Co. .....272
Morse Chain Co. ..... 34
Mossberg, Co., Frank .....251
Multiple Electric Products Co. *
Myrtle Mills, Inc. .....276

National Aniline & Chemical Co.300
National Bank of Commerce In New York .....282
National Machine Tool Co. ...273
National Oil Products Co. .....291
National Shawmut Bank .....277
New York & N. J. Lub. Co.... 37
New York Machinery Co. .... *
Newport Chemical Co. .....118

Oxweld Acetylene Co. .....108

Packard Motor Car Co. ..... *
Palmer Co., E. I. .....252
Parks-Cramer Co. ..... 12
Patterson Sargent Co. ..... 47
Paulus Chas B. .....146
Parkdale Mills, Inc. .....276
Pearson, Jos. T. .....146
Peaslee-Gaulbert Co. ..... 48
Perkins & Son, Inc., B. F. ...251
Permutit Co. .....236
Phila. Textile Mchry. Co. ....236
Phila. Drying Mchry. Co. ....298
Pick & Co., Albert .....
Portable Machinery Co. .....293
Powers Regulator Co. .....238
Precision Machine Co. .....252
Proctor & Schwartz, Inc. ....236
Prest-O-Lite Co., Inc. .....116

Refinite Co., The ..... *
Regnas, J. R. .....150
Reichmann Co. ..... *
Reliance Machine Works .....144
Richards Wilcox Mfg. Co. ....262
Robert & Co. ..... 39
Robbins & Sons, J. E. .....275
Roessler & Hasslacher Chemical Co. .....126
Rogers Fibre Co. .....253
Rome Mch. & Fdry. Co. .....233
Roy & Sons Co., B. S. ..... 22
Rundle-Spence Mfg. Co. .....258
Russell Mfg. Co. .....118

Saco-Lowell Shops ..... 18
Sani-Products Co. .....106
Sanitas Co. .....287
Sargent's Sons Corp., C. G. ...240
Scaife & Sons, Wm. B. .....297
Schaum & Uhlinger ..... 10
Schofield Auto Music Co. .....257
Schofield Sons Co., J. S. .....268
Schofield Co., Wm. .....295
Scott & Co., Henry L. .....128
Scott & Williams .....133
Seaboard Air Line Railway...280
Seeger Machine Tool Co. .... *
Shambow Shuttle Co. ..... 60
Sherman Service, Inc. ..... 21
Sherwood Mfg. Co. .....269
Shower Bath Cabinet Co. ..... 3
Signode System, Inc. .....260
Sirrine, J. E. ..... 46
S K F Industries, Inc. ..... 35
Smith & Furbush Machine Co...250
Slaughter Mchry. Co., G. G. ...297
Sonneborn Sons, Inc., L. .....297
Southern Cotton Yarn Co. ...276
Southern Cypress Mfg. Asso... 44
Southern Spindle & Flyer Co...252
Southern Stamp & Stencil Co...275
Southern States Supply Co. ... *
Southern Theatre Equip Co.... 19
Southern Welding & Mach. Co...275
Spiker & Lose .....291
Stafford Co., The ..... 6
Standard Fibre Co. .....285
Standard Gas Products Co. ...289
Standard Pressed Steel Co. ... 36
Steel Heddle Mfg. Co. .....254
Stieff, Inc., Chas. .....258
Sturtevant Co., B. F. ..... 14
Surpass Chemical Co. .....240
Swan & Finch .....124

Tagliabue Mfg. Co., C. J. .....239
Taylor Instrument Co. .....289
Terrell Machine Co. .....130
Texas Co. ..... 38
Textile Banking Co. .....282
Textile Finishing Mchry. Co...298
Thomas Co., F. H. .....255
Thompson & Binger, Inc. .....263
Tolhurst Machine Works .....235
Toomey, Frank, Inc. .....283
Torsion Balance Co. .....260
Triangle Motor Truck Co. ....259
Tropical Paint & Oil Co. ..... 50
Tuxbury Lumber Co., A. C. ... 42

United Chemical Products Corp.287
United Electric Co. ..... 25
Universal System, Inc. .....283
Universal Winding Co. .....295
U. S. Ball Bearing Co. ..... 30
U. S. Fuel Corp. .....295
U. S. Rubber Co. ..... *

Valley Iron Works .....270
Valley Waste Mills ..... 1
Veeder Mfg. Co. ..... *
Vogel Co., Jos. A. .....258

Wadsworth, Howland & Co., Inc. .....263
Walke Box Co., Inc. .....148
Wall & Son, C. M. .....128
Walraven Co., The .....270
Walsh & Weidner Boiler Co...268
Want Ads .....283
Warren Soap Mfg. Co .....113
Waterhouse Welding Co. ..... *
Weimar Bros. .....276
Westinghouse Electric & Mfg. Co. ..... 11
Westinghouse Lamp Co. ..... *
White Hickory Motor Truck Co. .....259
Whitinsville Spinning Ring Co.253
White Co. ..... 27
Whitin Machine Works ..... 18
Whiton Machine Co., D. E. ...266
Wildman Mfg. Co. .....142
Wilcox & Gibbs Sewing Mch. Co. .....134
Williams & Sons, I. B. ..... 23
Wolf & Co., Jacques .....246
Woodward, Baldwin & Co. ....278
Wright Co. ..... *

Zavon Co., Inc. .....245

# ARABOL SIZING TALLOW

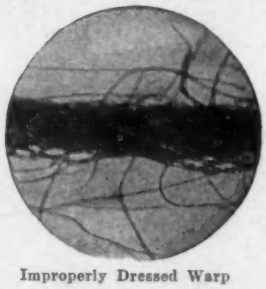
This is an especially prepared tallow for softening all counts of cotton yarns. We absolutely assure you it will produce any amount of softening desired. In addition to this it will prevent any sticking of the yarn to the slasher cylinders and also cause the yarn to open perfectly at the lease. On light pick goods it can be used alone, however, we recommend the use of our Gum G in connection with it on goods of 48 picks or more. To be used on either white or colored goods.

**Arabol Manufacturing Company**

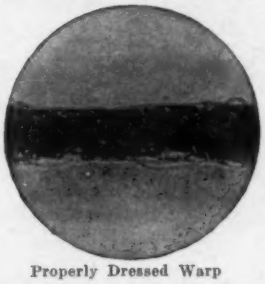
**100 William Street, New York City**

SONNEBORN PRODUCTS

## *The Microscope Shows How to Increase Production*



Improperly Dressed Warp



Properly Dressed Warp

It costs you valuable production if your warp shows "flake off" and consequent break-off and mildew. Beef tallow, starch and water alone cannot prevent your warp from becoming like the micro-photograph at the left.

Dress your warp perfectly—make the fibres straight by the scientific Sonneborn process as shown at right.

# AMALOL and GLUANTINE

in combination, form the perfect warp dressing. Amalol is the 100% softening agent, Gluantine the natural gum binder.

Many prominent New England and Southern cotton mills have adopted the modern Sonneborn method for "slasher" and "short chain" operations.

Tell us the number of your yarn and we will send the proper formula and a trial barrel each of Amalol and Gluantine.

*Profit by the microscope's story. Investigate today and you will increase production.*

**Textile Products Dixision** **L. SONNEBORN SONS, Inc.** **262 Pearl St., New York**

SONNEBORN

**G. G. SLAUGHTER MACHINERY COMPANY**

**Textile Machinery and Power Plant Equipment**

**GREENVILLE, SOUTH CAROLINA**

# WATER

WE-FU-GO AND SCAIFE

PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

"HURRICANE" DYEING, DRYING AND FINISHING MACHINERY, PRESSES, ETC.

The "HURRICANE Line of Drying Machinery Includes

Automatic Loop Dryers—For Underwear, Toweling, Piece Goods, Silks, Plushes, etc.

Continuous Piece Carbonizing Machines.

Automatic Yarn Dryers—For Cotton, Worsted, Jute, Silk and Artificial Silk Yarns.

Truck Dryers for Yarn, Tape, Braid, etc.

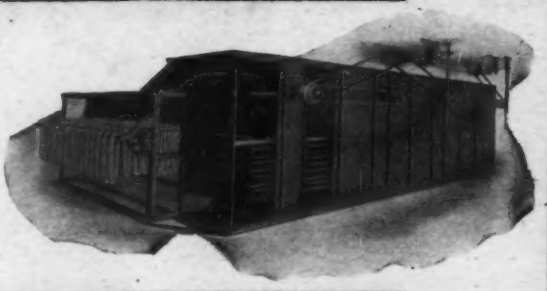
Automatic Raw Stock Dryers—Single and Multiple Apron Types for Wool, Cotton, Linters, Hair, Flax, etc.

Automatic Raw Stock Carbonizing Machines.

Automatic Yarn Drying and Conditioning Machines—for all kinds of yarn.

Truck Dryers for Yarn Dyed on Cones.

HOSIERY DRYERS.



THE PHILADELPHIA DRYING MACHINERY CO.
MAIN OFFICE AND WORKS STOKLEY ST. ABOVE WESTMORELAND, PHILADELPHIA, PA.

THE TEXTILE-FINISHING MACHINERY CO

Singers
Kiers
Washers
Squeezers

Tenter Frames
Calenders
Starch Mangles
Dye Jiggs

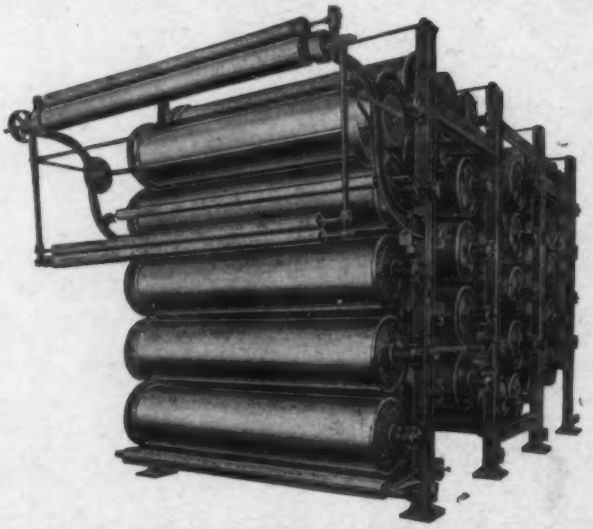
MAIN OFFICE AND WORKS
PROVIDENCE, R. I.

NEW YORK OFFICE
30 CHURCH ST

Machinery

for

Bleaching, Dyeing, Drying, Mercerizing and Finishing Textile Fabrics and Warps
Scutchers
Water Mangles
Drying Machines
Bolt on Guiders
Warp Dyeing Machines
Warp Mercerizing Machines
Warp Dryers
Warp Sizing



*Upright Drying Machine With Folder*

GEORGE DOWMAN
200 National City Bldg.,
ATLANTA, GEORGIA

FIRE PROOF SPECIALTIES
IN
SHEET METAL AND ROLLED STEEL

Contracts Taken for Complete Installations

The
Jones Machinery Corporation
Atlanta, Georgia.

Large stock of New and Used Apparatus of all kinds, for immediate shipment.

MOTORS, GENERATORS, COMPRESSORS, PUMPS, MACHINE TOOLS, WOOD-WORKING AND TEXTILE MACHINERY. BOILERS AND ENGINES.

Also a Well Equipped Repair Shop for all kinds of Electrical Repairs.

# CYCLONE FENCE

*From the Banker's Standpoint*

SECOND WARD SAVINGS BANK

CAPITAL AND SURPLUS $2,000,000

MILWAUKEE,

Sept. 3, 1920.

Cyclone Fence Company,
Waukegan, Illinois.

Gentlemen:

In analyzing the statements and business of industrial firms for bank loans and for the under-writing of bond and preferred stock issues, we pay considerable attention to the element of property protection fences, just as for some time past we have recommended or insisted upon sprinkler systems, fire insurance on plants and life insurance on the principal officers of a concern.

At the present time, owing to the complicated railroad situation and the resulting difficulty in securing materials and labor, it is extremely important that every precaution be taken to prevent damage to industrial property or materials on hand rather than merely insuring them.

We believe that a manufacturer has everything to gain through ample fence protection, and that it is a determining factor in establishing credit along with insurance and sprinkler systems.

Yours very truly,
Albert C. Elsey
Vice President.

PROPERTY PROTECTION PAYS

Look for the "Red Tag"

Phone, Wire or Write Main Offices, Waukegan, Illinois, or Branch Offices Nearest You

Cyclone Service Relieves You of All Fencing Problems. Let Us Know Your Fence Requirements

## CYCLONE FENCE COMPANY

Waukegan, Illinois

*Branch Factories:* Cleveland, Ohio Fort Worth, Texas

*Branch Offices:* CHICAGO INDIANAPOLIS DETROIT ROCHESTER PHILADELPHIA NEW YORK
BALTIMORE ST. LOUIS OAKLAND PORTLAND SAN FRANCISCO LOS ANGELES

# "NATIONAL DYES ARE NATIONAL ASSETS"

NATIONAL U.S.A. DYES

THE

## Largest Makers of Coal-Tar Dyes in America

### Quality

"National" Dyes are not placed on the market until their quality has been finally determined.

### Service

The technical service of the Company is at the disposal of its customers without charge. Shade Cards, containing colors produced under actual dyeing conditions of the various trades, are prepared regularly and distributed to all interested in dye-stuffs.

### Progress

Development of new "National" Dyes, as called for by market conditions, is undertaken as speedily as is compatible with good manufacturing policy controlling conditions of quality and quantity.

---

National Aniline and Chemical Co. Inc.

General Offices 21 Burling Slip, New York

# QUALITY